Hope, Self-Efficacy, and Perceived Stress among Iranian Women with Breast Cancer: Examining the Mediating Role of Resilience

Taheri, A., & Falavarjani, M. F.

Abstract: The current study seeks to investigate the impact of hope and self-efficacy on perceived stress through the mediating role of resilience among Iranian female patients diagnosed with breast cancer. Structural Equation Modeling (SEM) was employed to investigate a mediation model of perceived stress among 227 Iranian female patients undergoing cancer treatment at Omid Hospital in Esfahan, Iran. Results indicated that; (a) Hope and self-efficacy negatively impact perceived stress, and (b) Resilience partially mediates the association between hope and perceived stress as well as self-efficacy and perceived stress. In sum, patients with high levels of hope and self-efficacy were more likely to report a greater level of resilience and subsequently report lower perceived stress. These findings indicate that the promotion of resilience, along with hope and self-efficacy enhancements may contribute to decreased levels of perceived stress in breast cancer patients, and form part of more promising treatment options that incorporate positive psychology constructs.

الخلاصة: تسعى الدراسة الحالية إلى دراسة تأثير الأمل وتقدير الذات على مستوى الإجهاد المتصوَّر من خلال الدور المساعد للإصرار والمثابرة بين الإناث الإيرانيات المصابات بسرطان الثدي تم استخدام نمذجة المعادلات الهيكلية للتحقيق في نموذج وساطة للإجهاد المدرك لدى 227 مريضة إيرانية خضعن لعلاج السرطان في مستشفى أوميد في أصفهان ، إيران. أشارت النتائج إلى أن ؛ (أ) يؤثر الأمل وتقدير الذات سلبًا على الإجهاد المُدرك ، (ب) يساعد الإصرار والمثابرة جزئيًا مع الأمل في تقليل الإجهاد المُدرك. باختصار ، فإن المرضى الذين لديهن مستويات عالية من الأمل والفعالية الذاتية كانوا أكثر عرضة للإبلاغ عن مستوى أكبر من المرونة وبالتالي الإبلاغ عن انخفاض الضغط المتصور. تشير هذه النتائج إلى أن تعزيز المثابرة ، إلى جانب تحسين الأمل و تقدير الذات قد يسهم في انخفاض مستويات الإجهاد الملحوظ لدى مرضى سرطان الثدي. نناقش كيف يمكن لهذه النتائج ان تحسن الممارسة النفسية في المستقبل في مجال الرعاية الصحية.

About the Authors: Azarakhash Taheri graduated in 2017 from the Department of Psychology, University of Isfahan, Iran. Her Bachelor's thesis received distinction and focused on the metacognitive beliefs and substance use of workers in organizations. A year later, she was diagnosed with breast cancer herself. This has motivated her to study the cognitive abilities of breast cancer patients via a positive psychology approach. She is currently under treatment and hopes to maintain this research focus in the future. Mehrdad F. Falavarjani is a young social psychology researcher. In 2009, he received his Bachelor's degree in psychology (University of

Isfahan, Iran) and in 2014, completed his Master's degree from Universiti Putra Malaysia. With expertise in statistics and research tools, his interests include psychosocial adjustment, creativity, acculturation, as well as positive psychology and cancer patient's cognitive abilities. Currently, he is a researcher at the University of Isfahan, Iran.

Address all correspondence to: Mehrdad F. Falavarjani, Fazeli.mehrdad@gmail.com

Breast cancer is recognized as the second leading cause of death among female patients the world over (Ghoncheh, Pournamdar, & Salehiniya, 2016). According to Oeffinger et al. (2015), one out of eight women is prone to breast cancer. Regionally, in Iran, breast cancer is among the top five leading cancers causing deaths and reported to be increasing at a rate of 6 percent per year (Jazayeri, Saadat, Ramezani, & Kaviani, 2015); the average age of breast cancer diagnoses among Iranian females is also very young at 27.4 years old. This is the lowest of all ages across the Middle East and stands in stark comparison with the age of diagnosis of breast cancer in Western countries, which tends to be above the age of 50 years. Rates of breast cancer diagnoses across the Middle East region tend to mirror more closely the Iranian context than that of the West (Farhood, Geraily, & Alizadeh, 2018).

Dealing with cancer is not an easy task and has been the subject of many psychological and more recently, positive psychological studies (Seligman, 2008). For example, the recent development of the field of positive health reveals how aspects of positive psychology (i.e., hope, self-efficacy, resilience, etc.) mitigate physiological processes and behaviors that positively affect health (Aspinwall & Tedeschi, 2010; Park et al., 2016; Seligman, 2008).

Still, females diagnosed with breast cancer experience troubles undertaking daily responsibilities, including eating and sleeping, and also experience decreases in psychosocial wellbeing (Karanci & Erkam, 2007). This life changing diagnosis and continued coping, leads to high levels of stress, worry, anxiety and overall psychological distress. For example, Aryankhesal et al. (2019) conducted a meta-analysis covering the years 2008 to 2018 on samples of Iranians with various types of cancers, showing that those diagnosed with breast cancer have the highest prevalence of psychological distress (i.e., depression). In particular, empirical research showed that the prevalence of depression is 69.4% in Iran among female breast-cancer patients indicating high levels of perceived stress among them (Jafari, Goudarzian, & Nesami, 2018). Yet, strategies to cope using aspects of positive psychology have received little attention (Aryankhesal et al., 2019). Consequently, the current study explores the impact that hope, self-efficacy and resiliency might have on the perceived stress of female patients suffering with breast cancer in Iran.

Living and Coping with Cancer: Hope, Self-Efficacy, and Resiliency

Urcuyo, Boyers, Carver, and Antoni (2005) studied female patients with a breast-cancer diagnosis and showed that it had both positive and negative impacts on their psychological lives. On the negative side, prior studies showed that these patients faced stress, anxiety, and depression which undermined their quality of life (Kamangar, Dores, & Anderson, 2006; Melchior et al., 2013). For example, they reported impaired daily performance, difficulty making treatment

decisions, an avoidance of prescribed diets, and lack of, or decrease in social interaction. Moghtader (2017) added that nearly 80 percent of breast-cancer patients in Iran suffered from major anxiety and stress in the initial stages of their cancer development which other studies have shown, lead gradually to hopelessness, anger, depression, loneliness, and a sense of meaninglessness (Lee, Cohen, Edgar, Laizner, & Gagnon, 2006). On the positive side, life promoting outcomes were buffered by psychological resilience, which helped to promote a sense of acceptance of the cancer diagnosis and renewed the appreciation for one's own ability to deal difficulties (Urcuyo et al., 2005).

Clinical studies showed that patients with high resiliency traits experienced psychological growth and better adjustment to perceived stress in short and long term chronic diseases. Resilience is a psychological trait used to cope with negative events (Connor & Davidson, 2003; Falavarjani & Yeh, 2019), and a dynamic mechanism to cope with life stressors (Bonanno, 2005). Thus, resilience should be a discriminating variable for patients with cancer due to the fact that it may shield against the negative effects of stress patients face and help absorb distress when patients encounter their diagnosis. It may also positively impact aversive events during treatment, and thusly, ameliorate patients' mental health and treatment progression and outcomes. Still, resilience can be improved and play a mediating role between life-threating conditions and perceived stress during cancer treatment among high hope and self-efficacy individuals.

For instance, Solano, da Silva, Soares, Ashmawi, and Vieira (2016) showed that resilience and hope are discriminating factors for patients with advanced stages of non-malignant conditions. Although there are conditions where hope does is not an effective coping strategy (Flokman, 2010; Snyder, 1994), maintaining high levels of hope significantly helped patients cope with their cancer and facilitated the process of treatment (Chi, 2007; Movilla, Ngo, Lai, & Penson, 2018; Rustøen, Cooper, & Miaskowski, 2010). Hope is a strong feeling that adverse life conditions can be changed and that better times or life situations will come (Snyder, 1994). Individuals with high levels of hope experienced more positive emotions while facing adverse life occasions (Cheraghi, Hassani, Yaghmaei, & Alavi-Majed, 2009); they also enjoy more positive experiences, employ better strategies, and show higher levels of resilience when confronting life-threatening conditions and mental pressures (Urcuyo et al., 2005; Youssef & Luthans, 2007). They may experience lower levels of perceived stress during the progression and diagnosis of cancer. However, enhanced hope was positively associated with resilience in a study on patients with metastatic colorectal cancer, indicating that hope may improve resilience, thereby emphasizing the need for resilience-fostering interventions in palliative care (Solano et al., 2016). Thus, it is assumed that resilience can play a mediating role in its association between hope and perceived stress.

Another protective aspect for lower perceptions of stress in clinical environments might be the perception of self-efficacy. Females with a fear of breast cancer progression show low levels of self-efficacy (Melchior et al., 2013). This concept is related to individuals' levels of confidence and ability to implement a course of action to attain a desirable goal (Bandura, 1997); in sum, it is the belief that one can produce desired outcomes as a result of one's actions (Eller, Lev, Yuan, & Watkins, 2018). Once individuals perceived their actions as efficient, they behave in certain ways to cope or manage the prospective conditions they face. The confidence to take efficient action

provides individuals with mastery or control over adverse situations, offering psychological resilience in achieving goals (Bandura, 1997; Deci & Ryan, 2000). In this way, according to Moattari, Ebrahimi, Sharifi, and Rouzbeh (2012), self-efficacy empowers individuals to develop an enhanced quality of life and provides them with an understanding of their skills and capabilities in stressful conditions, such as chronic disease. Studies on patients with chronic diseases showed that higher levels of self-efficacy helped them engage in effective coping strategies, deploy greater resilience in the achievement of desired psychosocial outcomes and perceive lower levels of stress compared to patients with lower rates (Heitzmann et al., 2011; Moattari et al., 2012). Self-efficacy can operate as a buffer between stressful events and may be effective in predicting positive health-related behaviors in cancer patients (Awick, Phillips, Lloyd, & McAuley, 2017), leading to an increase in psychological resilience and lower stress. As resilience may play a mediating role in the link between life-threating conditions and perceived stress, we hypothesize that resilience also plays a mediating role in its association between self-efficacy and perceived stress.

The Present Study

The study aims to explore whether: (a) hope negatively associates with perceived stress; (b) self-efficacy negatively associates with perceived stress; (c) resilience plays a mediating role in the link between hope and perceived stress; and (d) resilience mediates the association between self-efficacy and perceived stress.

Method

Participants

A total of 227 female patients (M= 52.03, SD= 5.88) aged 43 to 62 years were selected from a group of patients with a breast-cancer diagnosis at Omid hospital in Esfahan, Iran. The majority of participants were married (86.34%, n= 196) and had been undergoing treatment between one and four months (average of 2.5 months; SD= 1.09). Ethics approved was granted by the Department of Psychology at the University of Isfahan, Esfahan, Iran. All subjects were informed of the purpose of the current research, as well as their right to anonymity, voluntary participation and right of withdrawal.

Procedure

The head of the cancer department at the Omid hospital provided permission to collect data from informed, consenting patients. A survey packet including an introductory letter and study questionnaires were given to the department head and then distributed to patients. Overall, 73.2% of survey packets (N= 227) were returned. All items in the questionnaire were in the Persian language. The reliability and validity of the scales had been standardized previously on Iranian samples.

Measures

Perceived stress was measured using the *Perceived Stress Scale* (PSS; Cohen, Kamarck, & Mermelstein, 1983) in Persian form (Khalili, Ebadi, Tavallai, & Habibi, 2017). Participants

responded to the 10 items (i.e., "In the last month, how often have you been upset because of something that happened unexpectedly?"), which range from 0 "none" to 4 "very much" on a Likert scale. To obtain the total score, the first four items of the PSS (i.e., 4, 5, 7 and 8) were reversed and then the sum of all items was calculated. Khalili et al. (2017) reported the PSS to be a highly reliable and valid measure. In the current study, the PSS coefficient of Cronbach's Alpha was high (α= 0.75).

Hope was assessed using the *Miller Hope Scale* (MHS, 1998) in Persian form (Abdi & Asadi-Lari, 2011). Subjects were asked to rate the 40 statements on a 5-point Likert scale (from "Strongly Disagree" to "Strongly Agree"). Higher scores equated to higher levels of hopefulness. This scale was previously examined in a sample of Iranian cancer patients and showed high reliability and validity (see Abdi & Asadi-Lari, 2011). In the current study, we found the Cronbach's Alpha coefficient of .076 for the MHS.

Self-efficacy was assessed using the Persian *General Self-Efficacy Scale* (GSES; (Cheraghi et al., 2009) developed by Sherer et al. (1982). This scale consisted of 17 items (i.e., "if someone opposes me, I can find the means and ways to get what I want") on a 5-point scale from "completely disagree" to "completely agree". Cheraghi et al. (2009) reported the internal consistency of the GSES to be as high as 0.86 and 0.94 for test-retest Pearson's correlation coefficient. In the current study, the reliability of scale was high (α = .89).

Finally, resilience was measured using the Persian version of the *Resilience Scale* (Khoshouei, 2009) developed by Connor and Davidson (2003). The scale includes 25 statements in the assessment of an individual's positive attitude during adverse life moments. This scale was selected as it comprises items that demonstrate not only challenge, commitment and control, but other aspects of resilience, such as goal setting, patience, faith, tolerance of negative affect, and humor. Subjects responded on a 5-point Likert scale ranging from 0 ('not true at all') to 4 ('true nearly all the time'). Sample items included 'I am able to handle unpleasant or painful feelings like sadness, fear and anger' and 'Under pressure, I stay focused and think clearly'. The scale's internal consistency in a sample of Iranians showed high reliability (Khoshouei, 2009). A strong alpha of 0.85 was obtained in the current study.

Results

Analyses were conducted using SPSS 20 and AMOS 20. Descriptive statistics and correlational analysis were carried out. Cronbach's alpha was employed to inform the internal consistency of the study scales and Pearson's correlation coefficient was used to examine interrelationships among the study variables. However, the path analysis in AMOS was used for both structural and mediation models. To maximize the likelihood estimation analysis, several fit indices were measured: 1) Chi-square (CMIN): 2) Chi-square divided by the degrees of freedom (CMIN/df): 3) the comparative fit index (CFI): and 4) the goodness of fit index (GFI). According to Kline (2010), these indices should be equal to or greater than 0.90 to be considered as an indication of fit models. Further, two tests of the RMSEA (Root Mean Square Error of Approximation) and the AIC (Akaike Information Criterion) were also measured, with cut-off criteria for good fit below 0.90 for the CFI and below 0.60 for the RMSEA, were measured (Hu &

Bentler, 1999). The AIC does not have a strict criterion to assess fit; the size of the AIC is compared across models, with the smallest usually indicating the best fit.

Descriptive and correlational analyses

Table 1 captures the basic descriptive analysis (i.e., means, standard deviations, skewness and kurtosis) and correlational coefficients of the study variables. As expected, statistical inspection reveals that the mean scores of perceived stress is above the midpoint scales (M= 21.66, SD= 5.75). However, patients showed high scores of resilience (M=75.35, SD=8.62), hope (M=130.50, SD=12.92), and self-efficacy (M= 42.41, SD=6.37). Further investigation illustrated the acceptable range of skewness (γ^1) and kurtosis (γ^2) values (−1 to 1), representing the normality of each target variable. Table 1 also presents the Pearson's correlation coefficients among the study's variables. As expected, all variables were moderately correlated. The findings revealed that hope, self-efficacy and resilience were negatively associated with perceived stress (r = -. 30, -41, -.33, p<0.000).

Table 1

Descriptive statistics and correlations among variables

	1	2	3	4
1. Perceived Stress	−	-.304**	-.411**	-.336**
2. Hope		−	.283**	.416**
3. Self-efficacy			−	.359**
4. Resilience				−
M	21.66	130.50	42.41	75.35
SD	5.75	12.92	6.37	8.62
γ^1	.168	-.055	.001	-.129
γ^2	.119	-.171	.083	-.063
No. Items	10	40	17	25
(Rang)	(4-38)	(92-162)	(25-57)	(51-97)

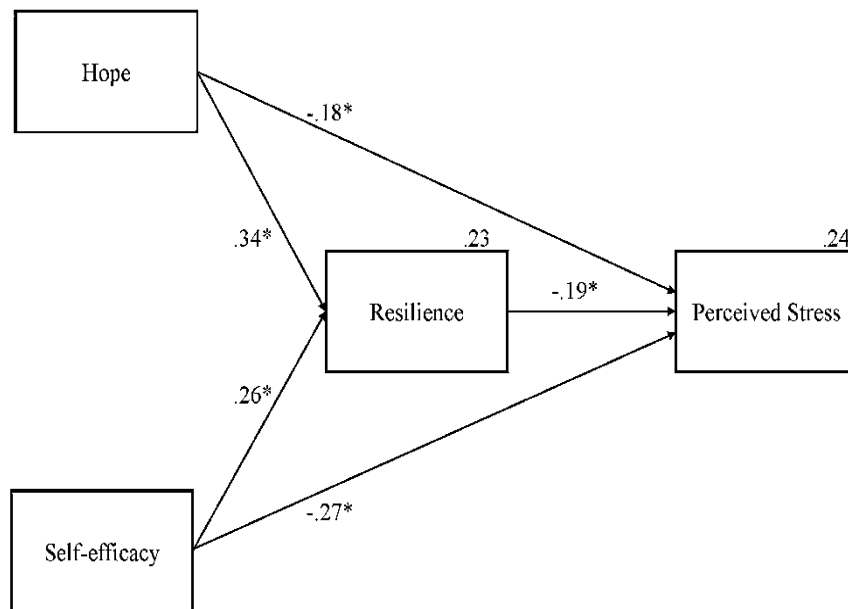Note. 1. **<.000; 2. N= 227; 3. γ^1= Sknewness, γ^2= Kurtosis

Path analysis

Fit indices for both structural and mediation models show satisfactory levels: χ^2 = 137.522, DF=6, CMIN/DF = 22.92, P < 0.000, CFI = 1.0, GFI = 0.73, RMSEA = 0.31, AIC= 145.52. According to Kline (2010), the fit indices indicate an acceptable fit.

Structural model

Figure 1 represents the structural model, with the exogenous variables as hope, self-efficacy, resilience and perceived stress. Statistical inspection revealed that hope and self-efficacy negatively predicted perceived stress (β = -.18 and β = -.27 at p<.0.000, respectively). Similarly, resilience also negatively predicted perceived stress (β = -.19, p= .004). Therefore, the first two hypotheses were accepted.

Note. * = Sig. at p<.001, Resilience R^2 = .23 and Perceived stress R^2 = .24

Figure 1. Path analysis of all study variables

Mediation model

Following Kline's (2010) steps, the mediating role of resilience in the relationship between hope and self-efficacy as exogenous variables and perceived stress as an endogenous variable was tested. Step 1, the CMIN and AIC values in the full mediation model should be significantly smaller than the CMIN and AIC values in the indirect model. In addition, the Parsimony Normed Fit Index in the full mediation model should be greater than the same value in indirect model. Step 2, the exogenous variable (perceived stress) must significantly predict resilience (the mediator). In Step 3, perceived stress must significantly associate with resilience. Finally, resilience (the mediator) must significantly predict perceived stress (the endogenous variable). However, according to Kline (2010), if there is no association between the exogenous and endogenous variables once the mediator is added, the full mediation is confirmed. Nevertheless, the partial mediation is established once the mediator is included, but the association between the exogenous and endogenous variables shrinks.

As the CMIN value in the full mediation model and Akaike Information Correction (χ^2 =0.00, p<0.000, AIC=20) is lower than the CMIN and AIC values in the indirect model (χ^2 = 27.56, p<0.00, AIC= 43.56), and in the full mediation model, PNFI (= .48) is larger than the PNFI value in the indirect model (PNFI = .26), it is confirmed that the mediation model is established.

Further analyses showed resilience partially mediates both associations between hope and perceived stress, and self-efficacy and perceived stress. Hope predicts perceived stress (β = -.17, SE = .03, CR= -2.69, p= .007) and resilience (β = -.34, SE = .04, CR= 5.66, p< .000), and resilience predicts perceived stress (β = -.13, SE = .04, CR= -2.91, p= .004) in the full mediation model. In the direct model, hope significantly predicts perceived stress (β = -.24, SE = .03, CR= -3.90, p<.000). However, as self-efficacy significantly predicts perceived stress in the direct model (β = -.31, SE = .05, CR= -5.085, p<.000, and self-efficacy predicts perceived stress (β = -.26, SE = .06, CR= -4.20, p<.000) and resilience (β = .25, SE = .08, CR= 4.22, p< .000), and resilience predicts perceived stress (β = -.13, SE = .04, CR= -2.91, p= .004) in the full mediation model, resilience also partially mediates the self-efficacy and perceived stress association. Therefore, hypotheses 2 and 3 were also accepted.

Discussion

Female breast-cancer patients are at high risk of stress given that they experience stressful moments during their cancer diagnosis and treatment alongside a wide range of physical and psychological stressors. In coping with these events, the findings shed light on a number of relationships. For one, hope, self-efficacy and resilience negatively predicted perceived stress. In addition, resilience played a mediating role in association between hope, self-efficacy and perceived stress.

The result showed that hope is an important factor in reducing levels of perceived stress associated with cancer (Movilla et al., 2018). According to prior studies (Chi, 2007; Rustøen et al., 2010), high levels of hope significantly help patients cope with their conditions and facilitate the process of treatment. Resilience also negatively impacts perceived stress and played a partial mediating role in the link between hope and perceived stress. According to Di Giacomo et al. (2016), resilience is a fundamental factor in fighting against the diagnosis and treatment of breast cancer. On the life-promoting side of cancer, psychological resilience increases patients' acceptance of cancer and renews the appreciation of their own ability to deal with difficulties. In other words, patients with high levels of hope were more likely to develop higher levels of psychological strength and endure perceived stresses posed by the cancer. In contrast, individuals with low levels of psychological resilience are at the risk of not effectively adjusting to their new health condition and believe they cannot tolerate it. Hopeful patients seem to develop higher levels of resilience and consequently expressed lower levels of perceived stress. Thus, an individual with higher levels of resilience may be flexible in adapting to environmental changes and able to manage and tolerate challenges from daily stressors more effectively (Falavarjani & Yeh, 2018, 2019).

Self-efficacy also reduced the perception of daily stress among patients. Breast cancer patients who have higher self-efficacy seem to rebound sooner than those with lower self-efficacy

(Moattari et al., 2012; Schwarzer & Warner, 2013). High self-efficacy seems to be a key trait in coping as it plays a role in the regulation of thoughts and behavior. Self-efficacy is a central concept in social cognitive theory (Bandura, 1991), whereby it denotes an individual's competence to utilize effective strategies to cope with life-threating conditions to achieve a positive outcome. Studies emphasize the enhancement of self-efficacy as a personal resource in coping behavior with cancer and consequently, patients with it show higher quality of life (Akin & Kas Guner, 2019), emotional well-being (Pintado, 2017), less depression (Phillips & McAuley, 2013), even at one-year follow-up (Grimmett et al., 2017).

While prior studies support the link between self-efficacy and perceived stress, the current study showed that self-efficacy has an indirect effect on patients' perceived stress through resilience. According to Carpenter, Stoner, Schmitz, McGregor, and Doorenbos (2014), self-efficacious patients tend to be more motivated to practice a self-focused approach to deal with daily stressors associated with cancer. This self-focused approach may also lead to developing high levels of resilience and better psychosocial adaptation, and consequently, the perception of lower levels of stress during the disease's progression and treatment. The analysis also showed that patients showed relatively high levels of hope, self-efficacy, and resilience, and we propose a few explanations for this. First, this may due to evidence for constructive change following a diagnosis. In a study with breast cancer patients, most females viewed their cancer experience as more positive than negative (Tomich & Helgeson, 2002). Compared to healthy females, moreover, females who survived breast cancer showed greater post-traumatic growth, life appreciation, and spiritual change (Ruini, Vescovelli, & Albieri, 2013).

Finally, perceptions of hope, self-efficacy and resilience are impacted by cultural practices (Scholz, Doña, Sud, & Schwarzer, 2002; Slezáčková, Cefai, & Prošek, 2018; Ungar, 2008) and religious beliefs (Shamsalinia, Pourghaznein, & Parsa, 2016). However, these are largely unrecognized among cancer patients in Iran, who can be characterized as having specific cultural ideals (i.e., honor culture) and values (i.e., collectivism), and who ascribe to the Muslim faith. Solano et al. (2016) propose the development and strengthening of personal resilience as a means for cancer patients to cope more effectively with perceived stress and to protect and promote levels of self-efficacy during treatment; yet, with the high prevalence of breast cancer in Iran, efforts to develop a culture-specific model of perceived stress with a focus on reducing perceptions of stress among patients has received little attention to date (Aryankhesal et al., 2019). While this was not the focus of our study, we suggest a few paths which may help to make sense of our findings.

For example, our results may be due to characteristics of the Iranian culture. According to Fathi (1985), women, especially mothers in the Iranian culture, are encouraged to practice being role models for their children in adverse circumstances. In fact, the word "patience stone" in the Iranian culture reflects such daily practices of high tolerance (Zabihzadeh, Hashim, & Wei, 2015). A patience stone is a metaphor for the high levels of patience and resilience in the face of adversity in Persian folklore. The stone absorbs plights and tolerates hardships and pains to extraordinary levels. When it explodes, however, the day of the Apocalypse arrives. Therefore, for Iranian mothers, the expression of negative thoughts such as death ideation is considered unacceptable; they are encouraged to maintain a strong self-image in the face of adversity. This cultural norm

may serve to explain their high levels of hope, self-efficacy, and resilience and encourage socially desirable response that are designed to help them and their families 'save face' in light of an already difficult situation.

Another plausible cultural fact that may help contextualize these high levels of hope, resilience and self-efficacy among participants could be the influence of religion, which strongly encourages this type of psychosocial response (Shamsalinia, et al, 2016). For example, in the Quran, Allah promises, "For indeed, with hardship [will be] ease" (Quran 94:5), encouraging believers to keep hope in seemingly endless painful conditions. Further, a state of despondency or disappointment, the condition where one's heart loses hope in Allah's Mercy, is in Islam, the only sin that cannot be forgiven. This may also have motivated more positive responses.

Limitations and Future Directions

The current study was not without limitations. All patients were selected from one main hospital in one Iranian city (male patients excluded), and included hospital inpatients under a variety of treatment stages (i.e., I to VI). Cultural values and their impact on patient responses, as well as prognosis should be considered as variables in future studies. Particularly, the cultural norm of saving face and showing a positive resilient attitude should be investigated further and preferable via qualitative methods like face-to-face interviews, which may uncover how and when these norms impact disease progression. Indeed, researchers have advocated for the greater use of qualitative methods in regional research (Ahammed, 2015) and positive psychology specifically (Hefferon, Ashfield, Waters, & Synard, 2017). Including male participants and patients under a variety of treatment stages also from different hospitals should be included for future research in a bid to overcome cultural, gender as well as any methodological issues. The moderating role of gender may open new insights on how such positive psychological constructs are used and ultimately impact patient stress. Finally, future studies might consider controlling related variables (i.e., optimism, distress tolerance) in efforts to decrease the effects of confounding variables.

Conclusion

Enhanced levels of resilience are considered an important factor that contributes to reducing participant levels of perceived stress although it is also influenced by hope and self-efficacy. In order to decrease perceived stress in dealing with cancer-treatment difficulties, clinical consultants and psychologists recommend efforts such as positive psychology approaches to support the development of resilience for better treatment outcomes. Such efforts may contribute to increased hope and self-efficacy as well as an increase in one's ability to deal with stress during and after cancer treatment. Many interventions are underway (Casellas-Grau, Font, & Vives, 2014). For example, gratitude-based interventions (Sztachańska, Krejtz, & Nezlek, 2019), positive psychotherapy for cancer survivors (Ochoa, Casellas-Grau, Vives, Font, & Borràs, 2017), positive psychology group interventions (Cerezo, Ortiz-Tallo, Cardenal, & de la Torre-Luque, 2014), and meaning-making coping (Ahmadi et al., 2018) have been used with success in improving quality of life and life satisfaction in multiple populations including patients (Ochoa et al., 2017). This work also shows the need for psychologists, oncologists and allied health professionals to work more

closely together towards the development of these psychosocial aims in order to help women achieve better health outcomes. We believe this is possible through a positive psychological or positive health approach, which focuses on building and strengthening psychological assets and not only removing or mitigating negative emotional experiences (Aspinwall & Tedeschi, 2010; Park et al., 2016; Seligman, 2008). In particular, the current study may help to better understand the needs of Iranian female patients, as well as other patients ascribing to the Islamic faith, which can lead to the development of culture-specific palliative services that may become a priority across regional healthcare systems (Khosravi et al., 2019).

References

Abdi, N., & Asadi-Lari, M. (2011). Standardization of three hope scales, as possible measures at the end of life in Iranian population. *Iranian Journal of Cancer Prevention, 4*(2), 71-77.

Ahammed, S. (2015). The essential fit between qualitative methodology and Emirati population: Towards meaningful social science research in UAE. *Social Epistemology, 29*(3), 344-358.

Ahmadi, F., Khodayarifard, M., Zandi, S., Khorrami-Markani, A., Ghobari-Bonab, B., Sabzevari, M., & Ahmadi, N. (2018). Religion, culture and illness: A sociological study on religious coping in Iran. *Mental Health, Religion & Culture, 21*(7), 721-736.

Akin, S., & Kas Guner, C. (2019). Investigation of the relationship among fatigue, self-efficacy and quality of life during chemotherapy in patients with breast, lung or gastrointestinal cancer. *European Journal of Cancer Care, 28*(1), e12898.

Aryankhesal, A., Ghashghaee, A., Sardari, E., Mahmoudi, S., Alihosseini, S., Dehnad, A., . . . Gharagozlou, D. (2019). Prevalence of depression in patients with cancer in Iran: A systematic review and meta-analysis. *BMJ Supportive & Palliative Care*, doi: 10.1136/bmjspcare-2018-001724

Aspinwall, L. G., & Tedeschi, R. G. (2010). The value of positive psychology for health psychology: Progress and pitfalls in examining the relation of positive phenomena to health. *Annals of Behavioral Medicine, 39*(1), 4-15.

Awick, E., Phillips, S., Lloyd, G., & McAuley, E. (2017). Physical activity, self-efficacy and self-esteem in breast cancer survivors: A panel model. *Psycho-Oncology, 26*(10), 1625-1631.

Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational Behavior and Human Decision Processes, 50*(2), 248-287.

Bandura, A. (1997). S*elf-efficacy: The exercise of control.* WH Freeman/Times Books/ Henry Holt & Co.

Bonanno, G. (2005). Clarifying and extending the construct of adult resilience. *American Psychologist, 60*(3), 265–267.

Carpenter, K. M., Stoner, S. A., Schmitz, K., McGregor, B. A., & Doorenbos, A. Z. (2014). An online stress management workbook for breast cancer. *Journal of Behavioral Medicine, 37*(3), 458-468.

Casellas-Grau, A., Font, A., & Vives, J. (2014). Positive psychology interventions in breast cancer. A systematic review. *Psycho-Oncology, 23*(1), 9-19.

Cerezo, M., Ortiz-Tallo, M., Cardenal, V., & de la Torre-Luque, A. (2014). Positive psychology group intervention for breast cancer patients: A randomised trial. *Psychological Reports, 115*(1), 44-64.

Cheraghi, F, Hassani, P, Yaghmaei, F, & Alavi-Majed, H. (2009). Developing a valid and reliable self-efficacy in clinical performance scale. *International Nursing Review, 56*(2), 214-221.

Chi, G. (2007). The role of hope in patients with cancer. *Oncology Nursing Forum. 34*, 415–424.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 2*(1), 385-396.

Connor, M, & Davidson, T. (2003). Development of a new resilience scale: The Connor-Davidson resilience scale (CD-RISC). *Depression and Anxiety, 18*(2), 76-82.

Deci, L, & Ryan, M. (2000). The" what" and" why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*(4), 227-268.

Di Giacomo, D., Cannita, K., Ranieri, J., Cocciolone, V., Passafiume, D., & Ficorella, C. (2016). Breast cancer and psychological resilience among young women. *Journal of Psychopathology, 3*(1), 9001-9005.

Eller, L. S, Lev, E. L., Yuan, C., & Watkins, A. V. (2018). Describing self-care self-efficacy: Definition, measurement, outcomes, and implications. *International Journal of Nursing Knowledge, 29*(1), 38-48.

Farhood, B., Geraily, G., & Alizadeh, A. (2018). Incidence and mortality of various cancers in Iran and compare to other countries: A review article. *Iranian Journal of Public Health, 47*(3), 309-316.

Falavarjani, M. F., & Yeh, C. J. (2018). A phenomenological study of adaptability, multiple identities, and acculturative strengths as an Iranian immigrant in Malaysia. *International Journal of Social Science Research. 6*(2), doi:10.5296/ ijssr.v6i2.13405.

Falavarjani, M. F., & Yeh, C. J. (2019). Optimism and distress tolerance in the social adjustment of nurses: Examining resilience as a mediator and gender as a moderator. *Journal of Research in Nursing, 24*(7), 500–512.

Fathi, A. (Ed.) (1985). *Women and the family in Iran.* Leiden, The Netherlands: Brill.

Folkman, S. (2010). Stress, coping, and hope. *Psycho-Oncology, 19*(9), 901-908.

Ghoncheh, M., Pournamdar, Z., & Salehiniya, H. (2016). Incidence and mortality and epidemiology of breast cancer in the world. *Asian Pacific Journal Cancer Prevention 17*(S3), 43-46.

Grimmett, C., Haviland, J., Winter, J., Calman, L., Din, A., Richardson, A., . . . Foster, C. (2017). Colorectal cancer patient's self-efficacy for managing illness-related problems in the first 2 years after diagnosis, results from the Colorectal Well-Being (CREW) study. *Journal of Cancer Survivorship, 11*(5), 634-642.

Hefferon, K., Ashfield, A., Waters, L., & Synard, J. (2017). Understanding optimal human functioning – The "call for qual" in exploring human flourishing and well-being. *The Journal of Positive Psychology, 12*(3), 211–219.

Heitzmann, C., Merluzzi, T., Jean-Pierre, P., Roscoe, J., Kirsh, K., & Passik, S. (2011). Assessing self-efficacy for coping with cancer: Development and psychometric analysis of the brief version of the Cancer Behavior Inventory (CBI-B). *Psycho-Oncology, 20*(3), 302-312.

Jafari, A., Goudarzian, A., & Nesami, M. (2018). Depression in women with breast cancer: A systematic review of cross-sectional studies in Iran. *Asian Pacific Journal of Cancer Prevention, 19*(1), 1-11.

Jazayeri, S., Saadat, S., Ramezani, R., & Kaviani, A. (2015). Incidence of primary breast cancer in Iran: Ten-year national cancer registry data report. *Cancer Epidemiology, 39*(4), 519-527.

Kamangar, F., Dores, G. M., & Anderson, F. (2006). Patterns of cancer incidence, mortality, and prevalence across five continents: Defining priorities to reduce cancer disparities in different geographic regions of the world. *Journal of Clinical Oncology, 24*(14), 2137-2150.

Karanci, A. N., & Erkam, A. (2007). Variables related to stress-related growth among Turkish breast cancer patients. *Stress and Health, 23*(5), 315-322.

Khalili, R., Ebadi, A., Tavallai, A., & Habibi, M. (2017). Validity and reliability of the Cohen 10-item Perceived Stress Scale in patients with chronic headache *(Persian version)*. *Asian Journal of Psychiatry, 26*, 136-140.

Khosravi, N., Nazeri, N., Farajivafa, V., Olfatbakhsh, A., Atashi, A., Koosha, M., & Haghighat, S. (2019). Supportive care of breast cancer patients in Iran: A systematic review. *International Journal of Cancer Management, 12*(4), e83255.

Kline, R. B. (2010). Promise and pitfalls of structural equation modeling in gifted research. In B. Thompson & R. F. Subotnik (Eds.), *Methodologies for conducting research on giftedness* (p. 147–169). Washington, DC: American Psychological Association.

Lee, V., Cohen, S., Edgar, L., Laizner, A., & Gagnon, A. (2006). Meaning-making intervention during breast or colorectal cancer treatment improves self-esteem, optimism, and self-efficacy. S*ocial Science & Medicine, 62*(12), 3133-3145.

Leung, A., & Cohen, D. (2011). Within-and between-culture variation: Individual differences and the cultural logics of honor, face, and dignity cultures. *Journal of Personality and Social Psychology, 100*(3), 507-517.

Melchior, H., Büscher, C., Thorenz, A., Grochocka, A., Koch, U., & Watzke, B. (2013). Self-efficacy and fear of cancer progression during the year following diagnosis of breast cancer. *Psycho-Oncology, 22*(1), 39-45.

Moattari, M., Ebrahimi, M., Sharifi, N., & Rouzbeh, J. (2012). The effect of empowerment on the self-efficacy, quality of life and clinical and laboratory indicators of patients treated with hemodialysis: A randomized controlled trial. *Health and Quality of Life Outcomes, 10*(1), 115-121.

Moghtader, L. (2017). Compare life expectancy and spiritual intelligence in breast cancer and healthy women. *Journal of Guilan University of Medical Sciences, 26*(101), 58-65.

Movilla M. U., Ngo, L. S. M., Lai, G., & Penson, R. T. (2018). Hope in the context of pain and palliative care. In R. Moore (Ed.), *Handbook of Pain and Palliative Care* (pp. 377-398). Cham, Switzerland: Springer.

Ochoa, C., Casellas-Grau, A., Vives, J., Font, A., & Borràs, J.-M. (2017). Positive psychotherapy for distressed cancer survivors: Posttraumatic growth facilitation reduces posttraumatic stress. *International Journal of Clinical and Health Psychology, 17*(1), 28-37.

Oeffinger, K. C., Fontham, E. T., Etzioni, R., Herzig, A., Michaelson, J. S., Shih, Y. C., ... American Cancer Society (2015). Breast cancer screening for women at average risk: 2015 guideline update from the American Cancer Society. *Journal of the American Medical Association, 314*(15), 1599-1614.

Park, N., Peterson, C., Szvarca, D., Vander Molen, R. J., Kim, E. S., & Collon, K. (2016). Positive psychology and physical health: Research and applications. *American Journal of Lifestyle Medicine, 10*(3), 200-206.

Phillips, S., M., & McAuley, E. (2013). Physical activity and fatigue in breast cancer survivors: A panel model examining the role of self-efficacy and depression. *Cancer Epidemiology and Prevention Biomarkers, 22*(5), 773-781.

Pintado, S. (2017). Self-concept and emotional well-being in patients with breast cancer. *Revista Iberoamericana de Psicología Y Salud, 8*(2), 76-84.

Ruini, C., Vescovelli, F., & Albieri, E. (2013). Post-traumatic growth in breast cancer survivors: New insights into its relationships with well-being and distress. *Journal of Clinical Psychology in Medical Settings, 20*(3), 383-391.

Rustøen, T., Cooper, B. A, & Miaskowski, C. (2010). The importance of hope as a mediator of psychological distress and life satisfaction in a community sample of cancer patients. *Cancer Nursing, 33*(4), 258-267.

Scholz, U., Doña, B. G., Sud, S., & Schwarzer, R. (2002). Is general self-efficacy a universal construct? Psychometric findings from 25 countries. *European Journal of Psychological Assessment, 18*(3), 242–251.

Schwarzer, R., & Warner, L. M. (2013). Perceived self-efficacy and its relationship to resilience. In S. Prince-Embury & D. H. Saklofske (Eds.), *The Springer series on human exceptionality. Resilience in children, adolescents, and adults: Translating research into practice* (p. 139–150). Springer Science: Business Media.

Seligman, M. (2008). Positive health. *Applied Psychology, 57*(2), 3-18.

Slezáčková, A, Cefai, C., & Prošek, T. (2018). Psychosocial correlates and predictors of perceived hope across cultures: A study of Czech and Maltese contexts. In A. Krafft, P., Perrig-Chiello, & A. M. Walker (Eds.), *Hope For a Good Life* (pp. 165-197). Centre for Resilience & Socio-Emotional Health, University of Malta.

Shamsalinia, A., Pourghaznein, T., & Parsa, M.. (2016). The relationship between hope and religious coping among patients with type 2 diabetes. *Global Journal of Health Science, 8*(1), 208-216.

Snyder, C. (1994). *The psychology of hope: You can get there from here.* Free Press.

Solano, J., da Silva, A., Soares, I., Ashmawi, H., & Vieira, J. (2016). Resilience and hope during advanced disease: A pilot study with metastatic colorectal cancer patients. *BMC Palliative Care, 15*(1), 70-84.

Sztachańska, J., Krejtz, I., & Nezlek, J. B. (2019). Using a gratitude intervention to improve the lives of women with breast cancer: A daily diary study. *Frontiers in Psychology, 10*(1365).

Tomich, P. L., & Helgeson, V. S. (2002). Five years later: A cross-sectional comparison of breast cancer survivors with healthy women. *Psycho-Oncology: Journal of the Psychological, Social and Behavioral Dimensions of Cancer, 11*(2), 154-169.

Ungar, M. (2008). Resilience across cultures. *The British Journal of Social Work, 38*(2), 218-235.

Urcuyo, K. R., Boyers, A., Carver, C., & Antoni, M. (2005). Finding benefit in breast cancer: Relations with personality, coping, and concurrent well-being. *Psychology & Health, 20*(2), 175-192.

Youssef, C., & Luthans, F. (2007). Positive organizational behavior in the workplace: The impact of hope, optimism, and resilience. *Journal of Management, 33*(5), 774-800.

Zabihzadeh, S. E., Hashim, R. S., & Wei, G. (2015). Domestic violence against women in Atiq Rahimi's the patience stone. *Journal of Language Studies, 15*(3), 51-60.