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Factors associated with distress among female cancer survivors at the workplace: A cross-sectional study

Juhyun Jin¹ | Eunju Lee² | Suin Lee³

¹Research Institute of Nursing Science, College of Nursing, Daegu Catholic University, Daegu, Republic of Korea

²College of Nursing, Keimyung University, Daegu, Republic of Korea

³Yeungjin University, Daegu, Republic of Korea

Correspondence

Eunju Lee, College of Nursing, Keimyung University, 1095, Dalgubeol-daero, Dalseo-gu, Daegu, 42601, Republic of Korea.
Email: 11578@gw.kmu.ac.kr

Abstract

Objectives: This study aimed to investigate the levels of fatigue, social support, spiritual well-being, and distress of female cancer survivors at the workplace, and identify factors associated with distress.

Methods: One hundred and eighty-two working female cancer survivors participated from the outpatient ward in two medical institutions in South Korea and they completed questionnaires assessing their general characteristics, fatigue, social support (colleagues and superiors), and spiritual well-being distress (existential and religious well-being). The data were analyzed using descriptive statistics, T-test, one-way ANOVA, correlation, and multiple linear regression with SPSS / WIN18 version.

Results: Most of the participants were breast and thyroid cancer (78.5%), married (46.2%), working periods below 10 years (62.7%) and the average age was 49.7 years. Distress positively correlated with fatigue and significant predictors of distress were “type of work” and “main source of household income” among general characteristics, fatigue, religious well-being, and existential well-being.

Conclusions: Our findings suggest that integrated program including educational and practical factors to reduce fatigue and increase spiritual well-being (i.e., peace, faith, meaning, et al.) can decrease distress. Whereas, the “ambivalence” of God accompanied by high religious well-being (i.e., punishment, abandon, blame, and so on) can rather increase distress. The development of an integrated management system of distress at work can be applied as a practical factor to improve job satisfaction, organizational performance, and quality of life.

KEYWORDS

cancer survivors, distress, fatigue, social support, spiritual well-being, workplace

1 | INTRODUCTION

Cancer incidence and mortality are rapidly growing worldwide, and are estimated to have risen to 18.1 million

new cases and 9.6 million deaths in 2018.¹ Worldwide, the incidence rate for all cancers combined was approximately 20% higher in men (Age-Standardized Incidence Rates; ASR, 218.6 per 100 000) than in women (ASR, 182.6 per 100 000), with the incidence rates varying all regions

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in both genders.¹ Similarly, death rates for all cancers combined worldwide are nearly 50% higher in men than in women.¹ In South Korea, the ASR is 306.1 for men and 288.5 for women, similar to that of Japan, however, lower than that in the United States and the United Kingdom.² Female patients with cancer have higher survival rates (77.1%) than men (63.8%), which can be attributed to the higher prevalence of thyroid and breast cancers, which have higher survival rates, in women than men.² Due to this high survival rate, female cancer survivors require long-term management to improve their quality of life because they also have a higher incidence of post-traumatic stress following cancer diagnoses than men, along with increased levels of anxiety regarding recurrences with longer survival periods.^{3–5} Therefore, to manage the long-term quality of life, economic stability is necessary and personal, societal awareness, and interest regarding cancer survivors' return to work have been rising.^{6,7} Distress is one of the major factors affecting the quality of life of female cancer survivors, with 42.1% of cancer survivors experiencing distress related to cancer diagnosis and treatments in South Korea, which is higher than in the United States and Canada.⁸ Cancer distress can be defined as “a multifactorial unpleasant emotional experience of a psychological (i.e., cognitive, behavioral, emotional), social, and/or spiritual nature that may interfere with the ability to cope effectively with cancer, its physical symptoms, and its treatment.”¹¹ Furthermore, depression, anxiety, and insomnia are reported as typical symptoms of distress.^{3,8} Cancer distress is associated with gender,^{3,5,9} age,¹⁰ disease stage,¹¹ socioeconomic status,^{7,11} fatigue,^{9,12} social support,^{13–15} and spirituality,¹⁶ and persists throughout the survival period. Temporary distress is normal, but consistently high levels of distress have a negative effect on cancer patients' life, such as reducing satisfaction and well-being with cancer and treatment, and delaying adaptation and recovery of daily life.^{2,3,12} Previous studies on the distress of survivors of breast cancer, a representative female cancer, reported that anxiety and depression in breast cancer survivors were higher than in healthy women,¹⁰ and breast cancer survivors' distress level in Korea was higher than in foreign countries.¹⁷ A study of 250 breast cancer survivors in the United States also showed that depression in breast cancer survivors was more frequent, with a lower quality of life than that of non-cancer women.¹⁸ Working female cancer survivors have higher levels of distress than men, making distress management more important.^{3,5,8,11} Female cancer survivors may experience more distress upon returning to work due to physical limitations on their work ability, prejudice, and judgment at the workplace due to colleagues' lack of cancer awareness, and anxiety and conflict between job retention and family stability.^{6,8,16} Furthermore, the household burden

on women remains high in Korean society, which can increase distress in female cancer survivors.¹⁹ Since unmanaged distress can negatively affect the quality of life, active efforts are required to reduce the distress of female cancer survivors at the workplace. Although there are no national statistics on the return-to-work rates among female cancer survivors in South Korea, the incidence rate of cancer in females is higher than that of men in their early 20s and 50s, which is the production age.² Moreover, breast and thyroid cancers, the representative cancers in women, have high survival rates, and women's rate of return to work is expected to increase.^{2,9,10}

Cancer fatigue is found as an affecting factor that negatively affects mood, concentration, cognitive function, work ability, and well-being; increases job stress; and potentially causes distress, such as anxiety, depression, and insomnia, in working female cancer survivors.^{6,9,12} Therefore, understanding the characteristics of fatigue among working female cancer survivors and identifying the relationship between fatigue and distress is essential for the management of their distress.¹² The lack of awareness of cancer and emotional support from supervisors and colleagues at work poses physical and emotional challenges, which then affect job turnover.^{6,14,15} Specifically, experiences of social support, such as interest, trust, encouragement, and provision of information by supervisors and colleagues, can help decrease symptoms of distress, such as depression and anxiety.²¹ Furthermore, it can contribute to female cancer survivors' successful workplace re-adaptation and job retention.^{6,20,22} Since cancer has a continuous influence throughout life, cancer survivors go through a high-distress crisis situation and become interested in existential and spiritual problems.²³ Spiritual well-being can be broadly divided into existential and religious well-being. Existential well-being, a sense of personal well-being, is based on the existence, meaning, and value of an individual, regardless of religion.²⁴ Conversely, religious well-being is distinguished as well-being based on religion, such as a relationship with God and religious coping.²⁴ A previous study reported that high spiritual well-being generally contributed to the maintenance of physical and mental health, as well as functional status of female cancer survivors.^{6,23,25} To our knowledge, there are few studies in South Korea to investigate the factors that influenced distress in working female cancer survivors.^{6,16,20} Furthermore, most distress studies have focused on the breast cancer,^{6,10–12} and dealt with distress-related variables in fragments, such as emotional challenges (i.e., mood, depression, anxiety, insomnia, etc.), spirituality and physical challenges (i.e., fatigue).^{6,10–12,16,19,20} This study aimed to investigate the levels of fatigue, social support, spiritual well-being, and distress of female cancer survivors at the workplace, and identify factors associated with

distress. The results can be applied to develop specific intervention programs for reducing distress, and can further contribute to increasing interest in health care providers, employers, and support groups for female cancer survivors at the workplace.

2 | METHOD

2.1 | Study population and data collection

This descriptive survey study aimed to identify the factors that influenced distress in female cancer survivors at workplace.

From August 2019 to July 2020, the convenience data were collected at the cancer centers of two medical institutes in Daegu City, South Korea. The inclusion criteria required working female cancer survivors within 5 years of a cancer diagnosis, who had finished acute cancer treatment such as chemotherapy and radiotherapy, had returned to work over 6 months ago, understood our study objectives, and gave consent to participate. The exclusion criteria were recurrence or metastasis of cancer, or patients currently receiving cancer treatment. Potential participants who matched the criteria were first selected among the patients visiting the cancer center during the data collection periods. The researcher then explained the study purpose, their rights as study participants, disadvantages, protection of personal information, and the study process in a face-to-face interview. After consenting to participate, the participants filled out the questionnaire in a relatively quiet conference room in the outpatient ward, within 20–25 min, and immediately submitted it. However, some participants were asked to participate via e-mail or mail due to time restrictions; the questionnaire was sent after signed consent. The sample size was calculated by G-power 3.1.9 software program. If a medium effect size required for regression analysis was 0.15, with a power of 0.80, significance level of $\alpha = 0.05$, at least 169 participants were required. Considering a dropout rate 10%, a total 186 questionnaires were distributed. Of these, 4 uncompleted questionnaires were excluded, and data from 182 participants were used for final analysis.

2.2 | Measurements

2.2.1 | Fatigue

The Functional Assessment of Chronic Illness Therapy-Fatigue (FACIT-Fatigue) Scale, developed by Yellen,

Cella, Webster, Blendowski, and Kaplan (1997),²⁶ was used to measure fatigue. Korean version downloaded from FACIT group (<https://www.facit.org>). This was a subscale of the Functional Assessment of Cancer Therapy (FACT-General) scale, originally developed as a tool to measure the quality of life of cancer patients. It was concise and short which made it convenient for cancer patients who experienced fatigue. It consisted of 13 questions aimed to measure how fatigued they were in the past week, ranked from “not at all” (0 points) to “very” (4 points). Cronbach's α was 0.95 in previous study²⁶ and 0.89 in this study.

2.2.2 | Social support

Social support was measured using a set of questions developed by House (1981)²⁷ and translated by Ko (1999).²⁸ Of these, four questions each were used to measure support from supervisors and colleagues, ranked from “not at all” (1 point) to “very much” (5 points), and a higher score indicated greater social support. In previous study, support from supervisors and colleagues' Cronbach's α was 0.85 and 0.78²⁹ and in this study, Cronbach's α of support from supervisors and colleagues was 0.86 and 0.76.

2.2.3 | Spiritual well-being

Spiritual well-being was measured using the Spiritual Well-Being Scale [SWBS], developed by Paloutzian and Ellison (1982),²⁴ Korean version was downloaded from the Westmont College homepage (<https://www.westmont.edu/psychology/raymond-paloutzian-spiritual-wellbeing-scale>). SWBS was comprised of two subsections, existential and religious well-being, with a total of 20 questions. “Strongly disagree” (1 point) to “Strongly agree” (6 points). Cronbach's α was 0.94 in previous study³⁰ and 0.97 in this study.

2.2.4 | Distress

A six-item psychological symptom evaluation tool, developed by the Korea National Cancer Center, was used to measure the severity of distress (depression, anxiety, insomnia) in cancer patients.⁸ Each response was rated from “not at all” (0 -points) to “absolutely” (10 points). The cut-off point for the tool was 4 points, and <4 points mean normal to mild distress, while ≥ 4 points mean severe distress.³¹ Cronbach's α was 0.92 in a previous study,⁸ and 0.95 in this study.

2.3 | Statistical analysis

The collected data were analyzed using the SPSS/WIN version 18.0, while differences in distress according to general characteristics were analyzed using the t-test and analysis of variance (ANOVA). To analyze the correlations among the main variables, Pearson's correlation coefficients were used. Further, a multiple stepwise regression analysis was performed to identify the affect factors of distress, and the significance level was set to a standard of $\alpha < 0.05$.

3 | RESULTS

Table 1 shows the general characteristics, including the job-related factors and clinical factors of participants. In Table 2, the results of the post hoc test showed that a higher level of distress was observed in the group with one child than in groups with zero or two children. Furthermore, a higher level of distress was observed in the group that had three cancer-related treatments, than in groups with one to two or more than four treatments, and in the group with sick leave from 6 months to 1 year. Table 3 shows the mean scores of main variables as follows: distress score was 3.30 ± 2.17 ; that was below 4, presenting mild distress levels, with fatigue, support from colleagues and superiors, existential well-being, and religious well-being being above moderate. Table 3 shows most variables of this study had negligible and weak correlation ($r = -0.183$ to 0.234) except for distress and fatigue had a strong positive correlation ($r = 0.486$), supervisors' support and colleagues' support had a moderate positive correlation ($r = 0.300$), and colleagues' support and existential well-being had moderate positive correlation also ($r = 0.362$). Existential well-being and religious well-being had a strong positive correlation ($r = 0.671$).

Table 4 shows the associated factors that influenced distress in working female cancer survivors through multiple stepwise regression analysis. There are seven significant variables among general characteristics and score of fatigue, colleagues' support and superiors' support, existential well-being and religious well-being that were put into the multiple stepwise regression model of distress. Finally, fatigue and religious well-being were positively associated with distress, while existential well-being was negatively associated with distress. Data from this study were suitable for multiple regression analysis, with a Durbin Watson score of 1.923 (close to 2.0), a tolerance score of 0.43–0.92 (> 0.1), and a VIF of 1.01–2.32 (< 10). Further, the correlations among main variables were below 0.80, and the explanatory power of the model was 28.3%, indicating suitable fitness ($F = 6.965$, $P < 0.001$).

TABLE 1 General characteristics of participants ($n = 182$)

Variables	Categories	N (%)
Age	≤30s	16 (8.8)
	40s	69 (37.9)
	50s	79 (43.4)
	60s	18 (9.9)
Marital status	Unmarried	44 (24.2)
	Married	127 (69.8)
	Others (divorce, etc.)	11 (6.0)
Number of children	None	52 (28.6)
	1	23 (12.6)
	2	90 (49.5)
	3	17 (9.3)
Education Level	High school	55 (30.2)
	College	95 (52.2)
	Graduate school	32 (17.6)
Religion	Catholic	61 (33.5)
	Protestant	40 (22.0)
	Buddhism	41 (22.5)
	Others	40 (22.0)
Occupation	Education	30 (16.5)
	Medical, Social Service	64 (35.2)
	Sales, clerical worker	81 (44.5)
	Manufacturing job	7 (3.8)
Working periods (years)	≤5	69 (37.9)
	6 < ~ ≤ 10	47 (25.9)
	11 < ~ ≤ 20	43 (23.6)
	≥21	23 (12.6)
Monthly income (10000 won)	<150	42 (23.1)
	150 < ~ ≤ 250	68 (37.4)
	250 < ~ ≤ 350	34 (18.7)
	>350	38 (20.9)
Working type	Shift duty	42 (23.1)
	Fix duty	140 (76.9)
Working position	Staff	107 (58.8)
	Manager	75 (41.2)
Main source of income for households	Yes	66 (36.3)
	No	116 (63.7)
Type of cancer	Thyroid ca.	37 (20.3)
	Gynecological ca.	15 (8.3)
	Breast ca.	106 (58.2)
	Gastric ca.	14 (7.7)
	Others	10 (5.5)

TABLE 1 (Continued)

Variables	Categories	N (%)
Cancer stage	Stage 1	87 (47.8)
	Stage 2	67 (36.8)
	Stage 3	28 (15.4)
Number of total cancer treatments	1	50 (27.5)
	2	57 (31.3)
	3	55 (30.2)
	4	20 (11.0)
Periods of sick leave	None	40 (22.0)
	≤6 months	63 (34.6)
	6 months <~ ≤1year ^c	33 (18.1)
	> 1 year	46 (25.3)
Cancer recurrence	Yes	15 (8.2)
	No	167 (91.8)
Number of current cancer treatments	None	74 (40.7)
	1~2	108 (59.3)
Return to same work place	Yes	111 (61.0)
	No	71 (39.0)
Return to same work type	Yes	111 (61.0)
	No	71 (39.0)

4 | DISCUSSION

In this study, the mean of distress score was 3.30 ± 0.70 , higher than that 2.75 in Yang et al.'s study (2018)⁴ and 2.27 in Park et al.'s study (2012)³² that was measured as the same tool with this study. This difference can be explained by the fact that previous research included subjects in the "long-term survival stage," as well as men and those who were unemployed. Although distress appears throughout all the stages of cancer, those in the acute and extensive stages tend to experience greater distress than those in the long-term survival stage, where the recurrence rate is significantly reduced, and the activity of cancer cells is negligible.^{11,12,33} In this study, 119 participants (65.4%) fell in the normal-mild stress group, while 63 (34.6%) fell in the severe stress group. According to Yu et al.'s study (2012),³¹ normal-moderate distress requires a variety of emotional education programs for doctors and nurses, with 63.6% of the stress being psychiatric. Support from clinical psychologists, social workers, and pastors is needed. In the severe group, regular management of distress is required, and the application of intervention methods according to the degree of distress is necessary. Among the general characteristics identified in this study, there were differences in the levels of distress between participants based on the number of children, type of work, main household income, number of cancer-related treatments, duration

of sick leave, return to original department, and return to the original work type. In some previous studies, there was no significant difference observed in distress based on the above general characteristics.^{4,34} Rather, a difference was observed in the levels of distress in gynecological or breast cancer survivors based on age^{10,35} level of education,³⁶ average monthly income,^{11,12} cancer diagnosis,⁴ job retaining,¹² and residential area.³⁵ Hence, the general characteristics resulting in the differences in the levels of distress and the measurement tools used are inconsistent.^{15,19,35} This indicates a need for further repetitive and expansive research. Nonetheless, the significant differences in the levels of distress observed in this study based on "number of children" was supported by previous research findings that indicated greater distress in breast cancer patients with a greater burden of child-rearing.¹⁹ Since for female cancer survivors in the workplace, it is difficult to make the balance between work and home that can lead to distress.^{6,7,13,19} Additionally, if they were the main household income, the burden would be greater, and distress would also increase accordingly.^{6,7} In this study, there are few studies that are difficult to compare with our study's results. In the results of the correlation between distress and major variables, fatigue had a strong correlation, which was similar to the results of previous studies.^{9,12,34,37} However, even P value $<.05$, distress presented a negligible correlation with supervisors' support and existential well-being. It is slightly different from similar studies which presented "weak" to "strong" correlations between variables.^{25,34} Therefore, a follow-up study is needed to confirm the degree of correlation through repeated studies applying same variables. In this study, although the factors associated with distress in working female cancer survivors were identified as fatigue and existential and religious well-being, a direct comparison to previous research was difficult due to the limited number of studies on female cancer survivors at work. Fatigue was identified as an associated factor for distress in this study, which is similar to the results of previous studies.^{14,35} For cancer survivors, fatigue is a common side effect and has the characteristic of chronic accumulation, indicating a need to prioritize its management.²⁰ Female cancer survivors who return to work face the dual difficulty of being female cancer patients sensitive to the loss of their femininity and the physical changes that occur throughout the diagnosis and treatment process.^{33,35} In particular, since 70% of the participants in this study were office workers and married, it can be seen that fatigue from the complex burden of housework and parenting is high and the resulting distress is also high.^{12,19} Therefore, it may be effective to establish interventions and strategies for fatigue control to reduce pain in cancer survivors. Nevertheless, cancer fatigue is influenced by the type of cancer, cancer

TABLE 2 Differences of distress by general characteristics ($n = 182$)

Variables	Categories	Mean \pm SD	P value	Scheffé test
Age	≤ 30 s	3.28 \pm 2.30	.966	
	40s	3.27 \pm 2.15		
	50s	3.38 \pm 2.21		
	60s	3.11 \pm 2.07		
Marital status	Unmarried	3.14 \pm 2.03	.773	
	Married	3.33 \pm 2.25		
	Others (divorce, etc)	3.62 \pm 1.72		
Number of children	None ^a	2.96 \pm 1.97	.025	a, c, d < b *
	1 ^b	4.55 \pm 2.35		
	2 ^c	3.23 \pm 2.15		
	3 ^d	3.03 \pm 2.17		
Education Level	High school	3.67 \pm 2.34	.314	
	College	3.17 \pm 2.08		
	Graduate school	3.08 \pm 2.09		
Religion	Catholic	3.03 \pm 2.03	.116	
	Protestant	3.59 \pm 2.04		
	Buddhism	3.85 \pm 2.48		
	Others	2.88 \pm 2.07		
Occupation	Education	3.24 \pm 1.83	.979	
	Medical, Social Service	3.25 \pm 2.22		
	Sales, clerical worker	3.35 \pm 2.25		
	Manufacturing job	3.55 \pm 2.34		
Working periods (years)	≤ 5	3.41 \pm 2.06	.472	
	6 < ~ ≤ 10	3.59 \pm 2.54		
	11 < ~ ≤ 20	3.05 \pm 1.97		
	≥ 21	2.87 \pm 2.00		
Monthly income (10000won)	<150	3.05 \pm 2.01	.233	
	150 < ~ ≤ 250	3.69 \pm 2.47		
	250 < ~ ≤ 350	3.32 \pm 1.93		
	>350	2.87 \pm 1.89		
Working type	Shift duty	4.03 \pm 2.19	.013	
	Fix duty	3.09 \pm 2.12		
Working position	Staff	3.24 \pm 2.19	.656	
	Manager	3.39 \pm 2.14		
Main source of income for households	Yes	3.79 \pm 2.22	.022	
	No	3.03 \pm 2.09		
Type of cancer	Thyroid ca.	2.78 \pm 1.95	.588	
	Gynecological ca.	3.28 \pm 2.58		
	Breast ca.	3.44 \pm 2.04		
	Gastric ca.	3.44 \pm 2.84		
	Others	3.65 \pm 2.65		
Cancer stage	Stage 1	3.05 \pm 2.06	.123	
	Stage 2	3.73 \pm 2.10		
	Stage 3	3.07 \pm 2.53		

TABLE 2 (Continued)

Variables	Categories	Mean \pm SD	P value	Scheffé test
Number of total cancer treatments	1 ^a	2.91 \pm 2.06	.010	a, b, d < c *
	2 ^b	3.20 \pm 2.22		
	3 ^c	4.05 \pm 2.19		
	4 ^d	2.52 \pm 1.67		
Periods of sick leave	None ^a	2.93 \pm 1.81	.003	a, b, d < b *
	\leq 6 months ^b	3.16 \pm 2.26		
	6 months < \sim \leq 1year ^c	4.53 \pm 2.27		
	> 1 year ^d	2.95 \pm 1.99		
Cancer recurrence	Yes	2.79 \pm 2.06	.336	
	No	3.35 \pm 2.17		
Number of current cancer treatments	None	3.00 \pm 2.22	.122	
	1 ~ 2	3.51 \pm 2.12		
Return to same work place	Yes	2.96 \pm 1.97	.010	
	No	3.84 \pm 2.35		
Return to same work type	Yes	2.87 \pm 1.98	.001	
	No	3.97 \pm 2.28		

Note: P values for between-group comparisons were assessed using one-way analysis of variance.

Abbreviation: SD, standard deviation.

aPost hoc analysis after the ANOVA test (Scheffé test) represents the significant differences in distress among groups a, b, c, and d.

TABLE 3 Correlations among distress, fatigue, social support, and spiritual well-being ($n = 182$)

Variables	Mean \pm SD	Range	1	2	3	4	5	6
1. Distress	3.30 \pm 2.17	0.00–10.00	1					
2. Fatigue	2.33 \pm 0.67	1.00–5.00	0.486**	1				
3. Supervisors' support	3.27 \pm 0.75	1.00–5.00	−0.186*	−0.067	1			
4. Colleagues' support	3.41 \pm 0.65	2.00–5.00	−0.027	−0.088	0.300**	1		
5. Existential well-being	4.34 \pm 1.05	1.57–6.00	−0.183*	−0.206**	0.234**	0.362**	1	
6. Religious well-being	3.97 \pm 1.64	1.00–6.00	0.037	−0.023	0.129	0.270**	0.671**	1

Note: SD, standard deviation * $P < .05$; ** $P < .001$.

progression stage, and treatment method,¹² so evaluation of the subject's disease-related characteristics and complex intervention plans are needed to reduce the physical and psychological aspects of fatigue based on those characteristics. Both the existential and religious well-being of female cancer survivors were found to be factors associated with distress. This is partially similar to the results of previous studies,^{23,25} suggesting that the 'request for spirituality' identified in the treatment and recovery process of cancer patients can overcome the distress experienced by female cancer survivors at work and further positively influence the quality of life.^{16,23,24,38} First of all, increasing

the existential well-being of one's existence and the value of life through successful return to work can restore self-esteem due to cancer diagnosis and treatment, disconnection of social relations, and reduce distress through trust, peace, and hope.^{3,7,21} Therefore, female cancer survivors at workplace need environmental and institutional support such as intervention programs that can increase spirituality in the workplace identified as positive factors for job stress and job satisfaction of female cancer survivors should be developed and applied.^{6,16} In addition, it is necessary also to change the perception of colleagues and superiors of the organization and provide practical

Variables	B	SE	β	t (P)
Number of children	0.040	0.143	0.019	0.28 (.779)
Working type	-0.287	0.346	-0.056	-0.83 (.409)
Return to same work place	0.372	0.363	0.084	1.03 (.306)
Return to same work type	0.497	0.421	0.188	1.29 (.197)
Number of total cancer treatments	0.029	0.166	0.031	0.19 (.849)
Main source of income for households	-0.550	0.326	-0.150	-1.86 (.064)
Periods of sick leave	-0.173	0.148	-0.088	-1.17 (.243)
Fatigue	1.318	0.221	0.405	5.96 (<.001)
Colleagues' support	-0.316	0.207	-0.109	-1.53 (.128)
Supervisors' support	0.155	0.239	0.047	0.65 (.516)
Existential well-being	-0.406	0.198	-0.196	-2.05 (.042)
Religious well-being	0.252	0.117	0.191	2.16 (.032)
$R^2 = 0.331$, Adjusted $R^2 = 0.283$ $F = 6.965$, $P < .001$				

Abbreviations: B, unstandardized beta; SE, standard error for unstandardized beta; β , standardized beta t, t-test statistic P, probability value.

TABLE 4 Factors associated with distress among female cancer survivors in the workplace ($n = 182$)

job-related education for a successful return to work.^{4,6} In contrast, an interesting outcome in this study was that while existential well-being helped lower the distress, a high “religious well-being” acquired through a relationship with God and prayers, in turn, increased distress. This result was inconsistent with previous research findings that “religious well-being” was a factor that reduced distress.^{23,25,36} This is because even if cancer survivors are gaining courage and resilience in a positive spiritual relationship with God, negative ‘ambivalence’ may exist at the same time.^{36,38} And this difference could be attributed to the influence of religion and religious activities that underlie religious well-being.^{32,38} Religion is an external expression of faith. Each religion has diverse views on faith and religious activities, which can also vary greatly within a religion depending on the individual's experience of religion and cultural background.^{36,40} In particular, the spiritual well-being scale, based on a Christian background and developed by Paloutzian and Ellison (1982), used in this study tended to demonstrate a higher degree of spiritual well-being in participants with a certain religious belief.²⁴

In this study, 55.7% of the participants were Christian and Catholic, while 72.1% of UK breast cancer patients believed in the existence of God,³⁶ and 89% of German breast cancer patients belonged to Catholicism and Protestants, which may differ in their findings.³⁹ Furthermore, this study examined female cancer survivors who were more active in their religious beliefs and sensitive to spiritual well-being than men.^{36,38} Even with strong religious beliefs, taking a negative religious stance that accepts cancer as a punishment from God or as

one's own fault may negatively affect physical and mental health in ways such as guilt, anxiety, depression, and insomnia.^{33,40} In fact, a study of US veterans who were cancer survivors demonstrated that women had higher rates of negative religious responses than men.⁴⁰ Hence, the formation and improvement of organizational culture that respects the religious beliefs and activities of working female cancer survivors may be necessary. As described above, a spiritually healthy person with confidence in one's existence, faith in overcoming cancer, and peace of mind is able to maintain peace within the depression and anxiety that occurs through the crisis and stress.¹⁶ This highlights the importance of maintaining and promoting existential and religious spiritual well-being as a strategy for reducing distress in female cancer survivors' sensitive to spiritual well-being. This highlights the importance of maintaining and promoting existential and religious spiritual well-being as a strategy for reducing distress in female cancer survivors' sensitive to spiritual well-being. Meanwhile, support from colleagues and supervisors was not found to influence distress in this study. This was different from the results obtained in previous studies, where social support was found to influence the symptoms of distress among female cancer survivors at the workplace.^{14,22,35} Hence, a future repetitive and expansive study on the association between distress and social support within an organization is required.

To our knowledge, this study investigated the relationship between the levels of distress and associated factors in working female cancer survivors, which had

not been previously studied in South Korea. The results demonstrated the following theoretical and clinical significance. First, the outcomes of this study have theoretical significance as preliminary research for future studies on female cancer survivors' return to work and related factors. Furthermore, this study has clinical significance as it provides basic data on planning and establishing practical strategies for the successful re-adaptation and return to work of female cancer survivors, whose numbers continue to increase in South Korea. Nevertheless, this study had some limitations. First, the cross-sectional study design complicates causal inference. Second, since the convenience sampling method was used, and the participants were in Daegu, the sample was not fully representative of all regions and all working female cancer survivors in South Korea. Even the sample size for this study was satisfactory, as the number was based on the G-power program calculation, with a similar size compared to previous studies,^{15,21,35,37} large scale studies with longitudinal design and randomized sampling methods should be conducted in the future to generalize the results.

5 | CONCLUSION

The following conclusions were drawn based on the outcomes of this study. First, to understand the distress of the participants, the general characteristics are concerned, such as the type of work, main source of household income, number of cancer-related treatments, duration of sick leave, return to the original department, and return to original work. And when developing an intervention program which can manage the distress in working female cancer survivors, family support or the burden of child-care must be considered if the participant is married, as well as work-related characteristics, such as the degree of workplace re-adaptation depending on the type of work and duration of sick leave. For the management of distress, such as anxiety, depression, and insomnia among female cancer survivors, a complex intervention plan and program must be developed and utilized at the workplace to ensure the reduction of physical and psychosocial fatigue, increased existential well-being, such as trust and peace, and the formation of positive religious well-being through faith and religious activities.

AUTHOR CONTRIBUTIONS

All authors contributed to the study conception and design. Material preparation, data collection, and analysis were performed by all authors. The first draft of the manuscript was written by JJ, and all authors commented on

the various versions of the manuscript. All authors read and approved the final manuscript.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

DATA AVAILABILITY STATEMENT

Research data are not shared.

DISCLOSURE

Approval of research protocol: This study was approved by the Bioethics Review Committee of Keimyung University (IRB No. 40525-201906-HR-037-01). *Informed consent:* Informed consent was obtained from all individual participants included in the study. *Registry and the registration no. of the study/trial:* N/A. *Animal studies:* N/A. *Conflict of interest:* The authors declare that there is no conflict of interest.

ORCID

Juhyun Jin  <https://orcid.org/0000-0001-8677-8638>

Eunju Lee  <https://orcid.org/0000-0001-9637-1778>

Suin Lee  <https://orcid.org/0000-0001-8739-4433>

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