

# Medical Mindfulness Intervention Program: Pathway to Enhancing Mindfulness, Self-Management Efficacy, and Quality of Life of Breast Cancer Patients

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## ABSTRACT

This study evaluates the effectiveness of a mindfulness-based nursing intervention in enhancing mindfulness, self-management efficacy, and quality of life in breast cancer patients. Using a randomized controlled trial design, 80 participants were divided into intervention (n=40) and control (n=40) groups. The intervention group participated in an 8-week mindfulness program, while the control group received standard care. Results demonstrated significant improvements in mindfulness, self-management efficacy, and quality of life in the intervention group. This suggests that mindfulness training could serve as a valuable supportive therapy for promoting psychological well-being in breast cancer patients.

## KEYWORDS

Breast cancer; Mindfulness intervention nursing; Self-management efficacy; Quality of life; Mental health; Rehabilitation

## 1. INTRODUCTION

Breast cancer significantly affects patients' psychological and social well-being. Conventional treatments often overlook emotional health, highlighting a need for complementary therapies. Mindfulness-based interventions, known to improve mental health and self-management (Iqbal, Iqbal, & Humayun, 2023; Nuraini, Intan, Gayatri, & Afriyani, 2023), have shown promise as supportive therapies in cancer care. Quality of life in breast cancer patients is an essential measure of their ability to cope with the disease and maintain a balance between physical, emotional, and social well-being (Fleming, Brady, & Anderson, 2021). This study explores the effects of a structured mindfulness-based nursing intervention on mindfulness, self-management efficacy, and quality of life in breast cancer patients, aiming to provide evidence for its integration into routine care.

## 2. LEARNING GOALS

This study aims to achieve the following goals:

- (1) Analyze participants' clinico-demographic profiles, including age, education, occupation, income, cancer stage, and treatment management.
- (2) Assess baseline levels of mindfulness, self-management efficacy, and quality of life.
- (3) Develop and implement a mindfulness nursing intervention program for the intervention group.
- (4) Evaluate changes in mindfulness, self-management efficacy, and quality of life post-intervention between the control and intervention groups.

(5) Analyze differences in mindfulness, self-management efficacy, and quality of life across various demographic categories.

(6) Determine the relationship between mindfulness, self-management efficacy, and quality of life post-intervention within the intervention group.

### **3. REVIEW OF RELATED LITERATURE**

Mindfulness interventions, such as Kabat-Zinn's Mindfulness-Based Stress Reduction (MBSR), have demonstrated positive effects in reducing stress and improving emotional regulation. In addition to traditional medical treatments, psychological interventions are considered essential for improving the overall quality of life (QoL) of breast cancer patients (Fang, Zeng, Liu, & Zhu, 2023). Research suggests that mindfulness enhances self-management by promoting greater awareness and acceptance, which can help individuals better cope with stress (Chen & Cui, 2020). Integrating mindfulness into cancer care addresses the unmet psychological and emotional needs of patients, complementing conventional treatment approaches.

### **4. METHOD**

This randomized controlled trial was conducted at a tertiary hospital. Participants were screened based on inclusion criteria and randomly assigned to intervention (n=40) and control (n=40) groups. The intervention group received an 8-week mindfulness-based program involving meditation, breathing exercises, and emotional regulation techniques, while the control group received standard care. Data on mindfulness, self-management efficacy, and quality of life were collected pre- and post-intervention using validated scales.

### **5. STATISTICAL ANALYSIS OF THE DATA**

Data were analyzed using SPSS 26.0. Descriptive statistics (mean and standard deviation) summarized the data. Independent sample t-tests and paired sample t-tests assessed inter-group and intra-group differences. Pearson correlation examined relationships among key variables. Statistical significance was set at  $p < 0.05$ .

## 6. RESULTS AND INTERPRETATION

**Table 1.** Participants' Clinico-Demographic Profile

Basic Information		Frequency (n)	Percentage (%)
Age	18~40	20	25
	41~50	23	28.7
	51~60	11	13.8
	61~70	13	16.3
	71~80	13	16.3
Educational level	Junior high school and below	25	31.3
	High school/junior level	19	23.8
	College level	21	26.3
	Master's level and above	15	18.8
Marital status	Married	67	83.8
	Unmarried, divorced, widowed, etc	13	16.3
Occupation	Civil Servants and Public Institution Personnel	17	21.3
	Businessmen, clerks and workers	19	23.8
	Retirement and Freelance Work	20	25
	Unemployed	24	30
Income	< 5000 CNY/MONTH	14	17.5
	5000-10000 CNY/MONTH	27	33.8
	10001-20000 CNY/MONTH	18	22.5
	>20000 CNY/MONTH	21	26.3
Long-Term Residence	City	42	52.5
	village	38	47.5
Smoking	None	69	86.3
	Yes	11	13.8
Drinking	None	54	67.5
	Yes	26	32.5
Metastasis	None	41	51.2
	Yes	39	48.8
Stage	Phase 0	20	25
	Phase 1	9	11.3
	Phase 2	28	35
	Phase 3	13	16.3
	Phase 4	10	12.5
Payment of Medical Expenses	Self-financing	33	41.3
	Partial public expense	23	28.7
	Full public expense	24	30
Current Cancer-Related Management	Chemotherapy	23	28.7
	Radiation therapy	26	32.5
	Surgery	17	21.3
	Targeted therapy	14	17.5

Table 1 shows that most participants were 41-50 years old, had a junior high school education, were married, unemployed, non-smokers and non-drinkers, with stage 2 cancer, self-financing their treatment, and mainly receiving radiation therapy.

**Table 2.1.** Descriptive analysis of mindfulness scale before the intervention

Item	Mean Total Score ± SD (Intervention Group)	Mean Total Score ± SD (Control Group)
Observation	22.3±2.34	21.9±2.78
Description	20.57±1.57	20.25±1.66
Awareness Action	24.13±2.21	23.73±2.28
Non-judgment of Inner Experience	16±2.16	16.13±1.84
Non-responsiveness to Internal Experience	16.18±1.89	16±1.93
Total Score of Mindfulness Level	99.17±4.17	98±3.79

Table 2.1 presents the pre-intervention descriptive analysis of the mindfulness scale, showing similar mean scores across all measured items between the intervention and control groups. The total mindfulness scores were 99.17±4.17 for the intervention group and 98±3.79 for the control group, establishing a comparable baseline for future impact assessment of the intervention.

**Table 2.2.** Descriptive Analysis of Self-Management Efficacy Scale before the intervention

Item	Mean Total Score ± SD (Intervention Group)	Mean Total Score ± SD (Control Group)
Positive Attitude	46.63±5.25	44.92±5.53
Stress Relief	9.18±2.05	9.68±2
Self-Decision	29.13±5.33	30.55±5.49
Total Self-Management Efficacy Score	84.92±7.43	85.15±9.38

Table 2.2 shows the pre-intervention analysis of the Self-Management Efficacy Scale, with similar mean scores between the intervention and control groups across positive attitude, stress relief, and self-decision subscales. The total self-management efficacy scores were 84.92±7.43 for the intervention group and 85.15±9.38 for the control group, indicating comparable baseline levels.

**Table 2.3.** Descriptive Analysis of Quality of Life Scale before the intervention

Item	Mean Total Score ± SD (Intervention Group)	Mean Total Score ± SD (Control Group)
Physical Health	10.5±1.24	10.55±1.2
Social and Family Well-being	35.75±1.33	35.7±1.36
Emotional Health	13.03±1	13.07±1.1
Functional Health	30.65±1.31	30.95±0.99
Other Issues	20.55±1.41	20.6±1.5
Total Quality of Life Score	110.47±2.68	110.88±2.26

Table 2.3 summarizes the pre-intervention Quality of Life Scale analysis, showing similar scores between the intervention and control groups. Both groups had comparable scores in physical health, social and family well-being, emotional health, functional health, and other issues. The total quality of life scores was 110.47±2.68 for the intervention group and 110.88±2.26 for the control group, indicating equivalent baseline conditions.

**Table 3.** Implementation of the mindful nursing intervention program (Intervention Group)

	Goal	Specific content
1	Intervention structure	The intervention group underwent an 8-week mindfulness program with weekly 2-hour sessions, incorporating mindfulness meditation, body scans, breathing exercises, and group discussions. The training aimed to enhance awareness of emotions, thoughts, and bodily responses, promoting self-regulation during cancer treatment. A blend of face-to-face guidance and online counseling (e.g., WeChat video sessions) provided flexibility and minimized psychological stress.
2	Address psychological and emotional needs	The study demonstrated that mindfulness training significantly alleviated negative emotions like anxiety and depression in the intervention group ( $p<0.05$ ). By fostering awareness and acceptance of emotional states, mindfulness reduced emotional reactivity and enhanced emotional management. Post-intervention, patients in the intervention group showed notable improvements in non-reactivity and non-judgmental awareness ( $p<0.001$ ), highlighting the effectiveness of mindfulness care in providing psychological support.
3	Improve self-management efficiency	The goal of the mindful nursing intervention was to enhance patients' self-management efficacy. The results indicated significant improvements in positive attitude, stress relief, and self-decision-making abilities in the intervention group ( $p<0.05$ ). The total self-management efficacy score increased from $85.04\pm 8.41$ pre-intervention to $92.58\pm 9.82$ post-intervention ( $p<0.05$ ), demonstrating that mindfulness training effectively boosted patients' self-confidence and management skills in handling daily life challenges related to their condition.
4	Improve the quality of life	Post-intervention analysis revealed significant improvements in several dimensions of quality of life, including physical, emotional, and functional health, in the intervention group ( $p<0.05$ ). The total quality of life score increased from $110.67\pm 2.47$ pre-intervention to $119.92\pm 6.44$ post-intervention ( $p<0.05$ ). Mindfulness training not only enhanced patients' ability to manage physical symptoms but also significantly improved their social, emotional, and functional well-being.

**Table 4.1.** Comparative Analysis of Mindfulness Scale Between Intervention and Control Groups Before Intervention and After Intervention

Mindfulness Scale	Intervention Group (n=40)	Control Group (n=40)	Statistic (U/t)	p-value
Observation (Pre)	22.30±2.35	21.90±2.78	742.5 <sup>a</sup>	0.58
Observation (Post)	24.90±2.56	22.85±3.07	493.5 <sup>a</sup>	0.003
Statistic (t/W)	0.00 <sup>c</sup>	0.00 <sup>c</sup>		
p-value	< 0.001	< 0.001		
Description (Pre)	20.58±1.57	20.25±1.66	705 <sup>a</sup>	0.353
Description (Post)	23.38±1.81	21.30±1.62	320 <sup>a</sup>	< .001
Statistic (t/W)	0.00 <sup>c</sup>	0.00 <sup>c</sup>		
p-value	< 0.001	< 0.001		
Awareness of Action (Pre)	24.13±2.21	23.73±2.28	737.5 <sup>a</sup>	0.545
Awareness of Action (Post)	26.80±2.08	24.83±2.44	439.5 <sup>a</sup>	< .001
Statistic (t/W)	0.00 <sup>c</sup>	0.00 <sup>c</sup>		
p-value	< 0.001	< 0.001		
Non-judgment (Pre)	16.00±2.16	16.13±1.84	764 <sup>a</sup>	0.73
Non-judgment (Post)	18.58±2.16	17.35±1.79	535 <sup>a</sup>	0.01
Statistic (t/W)	0.00 <sup>c</sup>	0.00 <sup>c</sup>		
p-value	< 0.001	< 0.001		
Non-reactivity (Pre)	16.18±1.89	16.00±1.94	751.5 <sup>a</sup>	0.64
Non-reactivity (Post)	19.10±2.10	18.08±1.94	581.5 <sup>a</sup>	0.034
Statistic (t/W)	0.00 <sup>c</sup>	0.00 <sup>c</sup>		
p-value	< 0.001	< 0.001		
Total Mindfulness Score (Pre)	99.18±4.18	98.00±3.79	1.318 <sup>b</sup>	0.191
Total Mindfulness Score (Post)	112.75±4.93	104.40±3.91	8.390 <sup>b</sup>	<0.001
Statistic (t/W)	-30.37 <sup>d</sup>	-16.98 <sup>d</sup>		
p-value	< 0.001	< 0.001		

Note: a - Mann-Whitney U, b - Independent Sample t-test, c - Wilcoxon Rank, d - Paired Sample t-test

Table 4.1 Post-intervention scores revealed significant improvements in the intervention group compared to the control group: Observation (24.90 vs. 22.85, p=0.003), Description (23.38 vs. 21.30, p<0.001), Awareness of Action (26.80 vs. 24.83, p<0.001), Non-judgment (18.58 vs. 17.35, p=0.01), Non-reactivity (19.10 vs. 18.08, p=0.034), and Total Mindfulness Score (112.75 vs. 104.40, p<0.001). These results demonstrate the effectiveness of the mindfulness intervention in enhancing overall mindfulness

**Table 4.2.** Comparative Analysis of Self-Management Efficacy Scale Between Intervention and Control Groups Before Intervention and After Intervention

Self-Management Efficacy Scale	Intervention Group (n=40)	Control Group (n=40)	Statistic (U/t)	p-value
Positive Attitude (Pre)	46.63±5.25	44.93±5.53	631 <sup>a</sup>	0.104
Positive Attitude (Post)	50.40±5.30	45.70±5.59	417 <sup>a</sup>	< .001
Statistic (t/W)	0.00 <sup>c</sup>	0.00 <sup>c</sup>		
p-value	< 0.001	< 0.001		
Stress Relief (Pre)	9.18±2.05	9.68±2.01	684.5 <sup>a</sup>	0.262
Stress Relief (Post)	12.68±1.91	10.65±2.13	396 <sup>a</sup>	< .001
Statistic (t/W)	0.00 <sup>c</sup>	0.00 <sup>c</sup>		
p-value	< 0.001	< 0.001		
Self-Decision (Pre)	29.13±5.33	30.55±5.49	-1.178 <sup>b</sup>	0.243
Self-Decision (Post)	34.20±4.83	31.53±5.57	2.297 <sup>b</sup>	0.024
Statistic (t/W)	-8.10 <sup>d</sup>	-7.71 <sup>d</sup>		
p-value	< 0.001	< 0.001		
Total Score (Pre)	84.93±7.43	85.15±9.38	-0.119 <sup>b</sup>	0.906
Total Score (Post)	97.28±7.48	87.88±9.69	4.856 <sup>b</sup>	0.001
Statistic (t/W)	-14.34 <sup>d</sup>	-11.75 <sup>d</sup>		
p-value	< 0.001	< 0.001		

Note: a - Mann-Whitney U, b - Independent Sample t-test, c - Wilcoxon Rank, d - Paired Sample t-test

Table 4.2 The intervention group demonstrated significant improvements in Positive Attitude (50.40±5.30 vs. 45.70±5.59, p<0.001), Stress Relief (12.68±1.91 vs. 10.65±2.13, p<0.001), and Self-Decision (34.20±4.83 vs. 31.53±5.57, p=0.024). Overall, the Total Self-Management Efficacy Score rose from 84.93±7.43 to 97.28±7.48 (p<0.001), highlighting the positive impact of the mindfulness intervention.

**Table 4.3.** Analysis of Differences in Quality of Life Scale Between Intervention and Control Groups Before Intervention and After Intervention

Quality of Life Scale	Intervention Group (n=40)	Control Group (n=40)	Statistic (U/t)	p-value
Physical Health (Pre)	10.50±1.24	10.55±1.20	789 <sup>a</sup>	0.917
Physical Health (Post)	24.90±2.56	22.85±3.07	0 <sup>a</sup>	< .001
Statistic (t/W)	157.00 <sup>c</sup>	0.00 <sup>c</sup>		
p-value	0.893	< 0.001		
Social and Family Well-being (Pre)	35.75±1.33	35.70±1.36	780 <sup>a</sup>	0.848
Social and Family Well-being (Post)	35.70±1.36	20.45±1.50	0 <sup>a</sup>	< .001
Statistic (t/W)	272.50 <sup>c</sup>	820.00 <sup>c</sup>		
p-value	0.879	< 0.001		
Emotional Health (Pre)	13.03±1.00	13.07±1.10	756 <sup>a</sup>	0.66
Emotional Health (Post)	13.07±1.10	23.30±1.18	0 <sup>a</sup>	< .001
Statistic (t/W)	198.50 <sup>c</sup>	0.00 <sup>c</sup>		
p-value	0.927	< 0.001		
Functional Health (Pre)	30.65±1.31	30.95±0.99	686 <sup>a</sup>	0.258
Functional Health (Post)	30.95±0.99	10.50±1.45	0 <sup>a</sup>	< .001
Statistic (t/W)	174.00 <sup>c</sup>	820.00 <sup>c</sup>		
p-value	0.147	< 0.001		
Other Issues (Pre)	20.55±1.41	20.60±1.50	794 <sup>a</sup>	0.957
Other Issues (Post)	35.40±1.55	35.45±1.41	772 <sup>a</sup>	0.787
Statistic (t/W)	0.00 <sup>c</sup>	0.00 <sup>c</sup>		
p-value	< 0.001	< 0.001		
Total Quality of Life Score (Pre)	110.47±2.68	110.88±2.26	-0.722 <sup>b</sup>	0.472
Total Quality of Life Score (Post)	125.67±2.21	114.17±3.35	18.117 <sup>b</sup>	<0.001
Statistic (t/W)	-23.80 <sup>d</sup>	-5.89 <sup>d</sup>		
p-value	< 0.001	< 0.001		

Note: a - Mann-Whitney U, b - Independent Sample t-test, c - Wilcoxon Rank, d - Paired Sample t-test

Table 4.3 The intervention group exhibited significant improvements, with Physical Health scores rising from 10.50±1.24 to 24.90±2.56 (p<0.001) and maintaining Social and Family Well-being at 35.70±1.36, while the control group fell to 20.45±1.50 (p<0.001). Overall, the Total Quality of Life Score for the intervention group increased from 110.47±2.68 to 125.67±2.21 (p<0.001), indicating the effectiveness of the mindfulness intervention compared to the control group's smaller gains.

**Table 5.1.** Test of difference in Mindfulness, Self-Management Efficacy, and Quality of Life Across Different Age Groups for Intervention Group

	Age (Mean ± SD)					F	p
	18~40y ears (n=7)	41~50= years (n=11)	51~60y ears (n=8)	61~70 years (n=6)	71~80 years (n=8)		
Total Mindfulness Score Before Intervention	100.57 ±3.95	99.18± 5.76	97.63± 4.31	99.67 ±2.58	99.13 ±2.85	0.4 7	0.75 9
Total Mindfulness Score After Intervention	112.57 ±4.39	112.55 ±5.92	111.25 ±6.04	114.5 ±4.23	113.38 ±3.7	0.3 7	0.83
Total Self-Management Efficacy Score Before Intervention	86.43± 9.54	86±4.9	87.88± 9.08	85±4. 69	79.13 ±6.66	1.6 8	0.20 3
Total Self-Management Efficacy Score After Intervention	97.14± 10.33	98.73± 4.2	99.5±1 0	96.5± 3.39	93.75 ±7.96	0.7 9	0.54 9
Quality of Life Before Intervention	2.89±0. 05	2.91±0. 07	2.89±0. 09	2.93± 0.09	2.92± 0.06	0.3	0.87 3
Quality of Life After Intervention	3.31±0. 04	3.28±0. 05	3.31±0. 06	3.34± 0.09	3.32± 0.04	1.1 5	0.36 9

Note: One-way ANOVA, \* p<0.05, \*\* p<0.01

Table 5.1 This summary provides an overview of the mean and standard deviation values for Total Mindfulness Score, Total Self-Management Efficacy Score, and Quality of Life across five age groups within the intervention group. Results show no significant differences across age groups before or after the intervention, indicating that the mindfulness program had a consistent effect across all ages.

**Table 5.2.** Test of difference in Mindfulness, Self-Management Efficacy, and Quality of Life Across Different Educational Levels for Intervention Group

	Educational Level (Mean ± SD)				F	p
	Junior high school and below (n=12)	High school/ju nior level (n=11)	Colleg e level (n=11)	Master's level and above (n=6)		
Total Mindfulness Score Before Intervention	100.17±4.2	100.18±3. 7	98.55± 4.39	96.5±4.23	1.27	0.317
Total Mindfulness Score After Intervention	113.33±4.1	114.64±5. 2	112.36 ±5.2	108.83±4. 0	2.26	0.117
Total Self-Management Efficacy Score Before Intervention	83.42±7.82	89.18±8.2	83.27± 6.03	83.17±5.7 8	1.42	0.269
Total Self-Management Efficacy Score After Intervention	95.67±7.96	100.73±7. 2	96.45± 6.9	95.67±7.8 4	1.06	0.394
Quality of Life Score Before Intervention	2.92±0.08	2.91±0.07	2.89±0. 05	2.9±0.11	0.52	0.675
Quality of Life Score After Intervention	3.31±0.05	3.28±0.04	3.32±0. 08	3.32±0.04	1.15	0.358

\* p<0.05, \*\* p<0.01

Table 5.2 This summary presents the mean and standard deviation values for mindfulness, self-management efficacy, and quality of life across four educational levels. The analysis found no significant differences among educational levels before or after the intervention, suggesting that the mindfulness program was equally effective regardless of participants' educational background.

**Table 5.3.** Test of difference in Mindfulness, Self-Management Efficacy, and Quality of Life Across Different Marital Status for Intervention Group

	Marital Status (Mean ± SD)		t	p
	Married (n=34)	Unmarried, Divorced, Widowed, and Others (n=6)		
Total Mindfulness Score Before Intervention	99.38±4.12	98±4.69	0.74	0.462
Total Mindfulness Score After Intervention	113±4.94	111.33±5.05	0.76	0.452
Total Self-Management Efficacy Score Before Intervention	84.32±7.48	88.33±6.68	-1.23	0.227
Total Self-Management Efficacy Score After Intervention	96.32±7.51	102.67±4.89	-1.99	0.054
Total Quality of Life Score Before Intervention	2.9±0.07	2.93±0.09	-1.02	0.316
Total Quality of Life Score After Intervention	3.31±0.06	3.29±0.04	0.81	0.425
* p<0.05, ** p<0.01				

Table 5.3 summarizes the mean and standard deviation values for mindfulness, self-management efficacy, and quality of life based on marital status. No significant differences were found between married and unmarried/divorced/widowed participants before or after the intervention, indicating that marital status did not influence the effectiveness of the intervention.

**Table 5.4.** Test of difference in Mindfulness, Self-Management Efficacy, and Quality of Life Across Different Occupation for Intervention Group

	Occupation (Mean ± SD)				F	p
	Civil Servants and Public Sector Employees (n=8)	Businesspeople, Clerks, and Workers (n=8)	Retirees and Freelancers (n=12)	Unemployed (n=12)		
Total Mindfulness Score Before Intervention	97.38±4.66	97.75±3.2	102.08±3.78	98.42±3.68	3.23	0.046*
Total Mindfulness Score After Intervention	110.63±4.78	110±4.04	114.75±4.05	114±5.48	2.75	0.072
Total Self-Management Efficacy Score Before	84.13±7.57	81.88±6.36	87.5±7.01	84.92±8.35	1.1	0.374
Total Self-Management Efficacy Score After Intervention	99.5±3.16	95.63±10.76	97.08±7.12	97.08±7.89	0.69	0.568
Total Quality of Life Score Before Intervention	2.88±0.07	2.87±0.05	2.9±0.07	2.95±0.06	3.42	0.038*
Total Quality of Life Score After Intervention	3.31±0.06	3.34±0.08	3.29±0.05	3.31±0.05	0.97	0.429
* p<0.05, ** p<0.01						

Table 5.4 presents the mean and standard deviation values for mindfulness, self-management efficacy, and quality of life across different occupational groups. Significant differences were observed in Total Mindfulness Score and Quality of Life Score before the intervention, but these differences were not present post-intervention, indicating the intervention's equalizing effect across occupations.

**Table 5.5.** Test of difference in Mindfulness, Self-Management Efficacy, and Quality of Life Across Different Income Levels for Intervention Group

	Income Level (Mean ± SD)				F	p
	Less than ¥5,000/month (n=6)	¥5,000–¥10,000/month (n=13)	¥10,001–¥20,000/month (n=7)	More than ¥20,000/month (n=14)		
Total Mindfulness Score Before Intervention	100.83±4.07	99.69±3.79	97.86±4.41	98.64±4.57	0.62	0.612
Total Mindfulness Score After Intervention	113.17±4.4	114.54±4.99	110.71±4.82	111.93±5.05	1.03	0.408
Total Self-Management Efficacy Score Before Intervention	88.5±9.2	85.62±4.66	81.14±7.65	84.64±8.46	0.88	0.476
Total Self-Management Efficacy Score After Intervention	102.33±6.41	97.85±5.41	93.43±6.6	96.5±9.18	1.93	0.168
Total Quality of Life Score Before Intervention	2.86±0.04	2.92±0.07	2.86±0.08	2.94±0.06	4.77	0.014*
Total Quality of Life Score After Intervention	3.3±0.06	3.32±0.08	3.33±0.03	3.28±0.04	2.52	0.095
* p<0.05, ** p<0.01						

Table 5.5 summarizes the mean and standard deviation values for mindfulness, self-management efficacy, and quality of life across various income levels within the intervention group. Significant differences in Quality of Life were observed before the intervention; however, these differences were not present post-intervention, indicating the intervention's consistent effect across income groups.

**Table 5.6.** Test of difference in Mindfulness, Self-Management Efficacy, and Quality of Life Across Different Long-term Residence for Intervention Group

	Long-term Residence (Mean ± SD)		t	p
	City (n=20)	Rural (n=20)		
Total Mindfulness Score Before Intervention	99.35±4.12	99±4.33	0.26	0.795
Total Mindfulness Score After Intervention	112.4±5.07	113.1±4.89	-0.44	0.659
Total Self-Management Efficacy Score Before Intervention	83.4±5.86	86.45±8.6	-1.31	0.198
Total Self-Management Efficacy Score After Intervention	96.05±7.97	98.5±6.95	-1.04	0.307
Total Quality of Life Score Before Intervention	2.9±0.07	2.92±0.07	-0.76	0.45
Total Quality of Life Score After Intervention	3.32±0.07	3.3±0.04	1.07	0.289
* p<0.05, ** p<0.01				

Table 5.6 summarizes the mean and standard deviation values for mindfulness, self-management efficacy, and quality of life across city and rural participants in the intervention group. The results show no significant differences between city and rural groups in any of the scores before or after the intervention, indicating that the intervention was equally effective across different residential backgrounds.

**Table 5.7.** Test of difference in Mindfulness, Self-Management Efficacy, and Quality of Life between Smokers and Non-Smokers for Intervention Group

	Smoking (Mean ± SD)		t	p
	No(n=33)	Yes(n=7)		
Total Mindfulness Score Before Intervention	99.03±4.2	99.86±4.3	-0.47	0.64
Total Mindfulness Score After Intervention	112.73±4.53	112.86±6.96	-0.06	0.95
Total Self-Management Efficacy Score Before Intervention	85.06±7.71	84.29±6.37	0.25	0.806
Total Self-Management Efficacy Score After Intervention	97.91±7.55	94.29±6.87	1.17	0.25
Total Quality of Life Score Before Intervention	2.9±0.07	2.92±0.09	-0.57	0.575
Total Quality of Life Score After Intervention	3.31±0.06	3.29±0.05	0.7	0.491

\* p<0.05, \*\* p<0.01

Table 5.7 presents the mean and standard deviation values for mindfulness, self-management efficacy, and quality of life between smokers and non-smokers in the intervention group. No significant differences were observed between the two groups before or after the intervention, suggesting that smoking status did not influence the intervention’s effectiveness.

**Table 5.8.** Test of difference in Mindfulness, Self-Management Efficacy, and Quality of Life between Drinkers and Non-Drinkers for Intervention Group

	Drinking (Mean ± SD)		t	p
	NO (n=24)	YES(n=16)		
Total Mindfulness Score Before Intervention	98.92±3.97	99.56±4.57	-0.47	0.638
Total Mindfulness Score After Intervention	112.88±4.96	112.56±5.03	0.19	0.847
Total Self-Management Efficacy Score Before Intervention	84.08±6.41	86.19±8.8	-0.88	0.387
Total Self-Management Efficacy Score After Intervention	98.5±5.36	95.44±9.77	1.28	0.209
Total Quality of Life Score Before Intervention	2.91±0.06	2.9±0.08	0.31	0.759
Total Quality of Life Score After Intervention	3.31±0.06	3.3±0.05	0.55	0.586

\* p<0.05, \*\* p<0.01

Table 5.8 shows the mean and standard deviation values for mindfulness, self-management efficacy, and quality of life between drinkers and non-drinkers in the intervention group. No significant differences were found between the groups before or after the intervention, indicating that drinking status did not impact the effectiveness of the intervention.

**Table 5.9.** Test of difference in Mindfulness, Self-Management Efficacy, and Quality of Life between Migrants and Non-migrants for Intervention Group

	Migration (Mean ± SD)		t	p
	NO(n=22)	YES(n=18)		
Total Mindfulness Score Before Intervention	99.27±4.33	99.06±4.09	0.16	0.872
Total Mindfulness Score After Intervention	112.68±4.86	112.83±5.15	-0.1	0.924
Total Self-Management Efficacy Score Before Intervention	83.91±7.7	86.17±7.1	-0.96	0.345
Total Self-Management Efficacy Score After Intervention	96.09±7.37	98.72±7.57	-1.11	0.274
Total Quality of Life Score Before Intervention	2.9±0.07	2.92±0.07	-0.76	0.451
Total Quality of Life Score After Intervention	3.31±0.06	3.3±0.05	0.31	0.762

\* p<0.05, \*\* p<0.01

Table 5.9 shows that there were no significant differences in Total Mindfulness Score, Self-Management Efficacy, or Quality of Life between migrants and non-migrants before and after the intervention, indicating the intervention was equally effective for both groups.

**Table 5.10.** Test of difference in Mindfulness, Self-Management Efficacy, and Quality of Life across different stages for Intervention Group

	Stage (Mean ± SD)					F	p
	Stage 0 (n=10)	Stage 1 (n=6)	Stage 2 (n=12)	Stage 3 (n=7)	Stage 4 (n=5)		
Total Mindfulness Score Before Intervention	98.6±3.92	100.33±3.61	99.33±4.46	99.43±3.95	98.2±6.06	0.21	0.926
Total Mindfulness Score After Intervention	112.6±4.43	113.17±4.22	112±4.39	113.29±6.21	113.6±7.5	0.11	0.977
Total Self-Management Efficacy Score Before Intervention	84.6±5.85	85.67±5.75	86±6.71	84.71±13.3	82.4±4.16	0.47	0.758
Total Self-Management Efficacy Score After Intervention	97.1±7.06	99.5±4.14	97.33±9.08	97.57±10.15	94.4±3.65	1.06	0.408
Total Quality of Life Score Before Intervention	2.9±0.08	2.88±0.05	2.9±0.08	2.92±0.05	2.96±0.05	1.78	0.184
Total Quality of Life Score After Intervention	3.29±0.05	3.33±0.07	3.32±0.06	3.3±0.05	3.27±0.03	1.36	0.294

\* p<0.05, \*\* p<0.01

Table 5.10 indicates no significant differences in Total Mindfulness Score, Self-Management Efficacy, or Quality of Life across different cancer stages before and after the intervention, suggesting the intervention was equally effective regardless of cancer stage.

**Table 5.11.** Test of difference in Mindfulness, Self-Management Efficacy, and Quality of Life across different medical payment methods for Intervention Group

	Medical Payment Method (Mean ± SD)			F	p
	Self-Payment (n=16)	Partial Public Payment (n=12)	Full Public Payment (n=12)		
Total Mindfulness Score Before Intervention	99.25±4.49	100.08±3.78	98.17±4.24	0.67	0.523
Total Mindfulness Score After Intervention	112.88±4.98	114.25±4.69	111.08±4.98	1.25	0.304
Total Self-Management Efficacy Score Before Intervention	84.81±7.34	85.83±7.83	84.17±7.7	0.14	0.873
Total Self-Management Efficacy Score After Intervention	98.38±6.3	97.25±7.31	95.83±9.32	0.34	0.716
Total Quality of Life Score Before Intervention	2.9±0.07	2.87±0.07	2.95±0.06	3.7	0.04*
Total Quality of Life Score After Intervention	3.3±0.07	3.33±0.06	3.29±0.04	1.93	0.166
* p<0.05, ** p<0.01					

Table 5.11 shows that only pre-intervention Quality of Life scores differed significantly between groups, while post-intervention scores and other measures showed no significant differences, indicating that the intervention's effects were not influenced by different medical payment methods.

**Table 5.12.** Test of difference in Mindfulness, Self-Management Efficacy, and Quality of Life across different current cancer-related manage for Intervention Group

	Current cancer-related manage (Mean ± SD)				F	p
	Chemotherapy (n=13)	Radiation therapy (n=14)	Surgery (n=8)	Targeted therapy (n=5)		
Total Mindfulness Score Before Intervention	98.77±3.85	99.29±4.07	99.25±4.71	99.8±5.63	0.06	0.978
Total Mindfulness Score After Intervention	110.92±3.84	113.07±5.14	114.13±6.01	114.4±5.03	1.09	0.386
Total Self-Management Efficacy Score Before Intervention	83.85±5.98	84.07±7.65	84.88±7.97	90.2±9.36	0.63	0.61
Total Self-Management Efficacy Score After Intervention	95.77±8.09	96.14±7.16	98.88±7.97	101.8±5.4	1.36	0.291
Total Quality of Life Score Before Intervention	2.9±0.08	2.91±0.07	2.91±0.07	2.89±0.07	0.14	0.934
Total Quality of Life Score After Intervention	3.33±0.05	3.33±0.06	3.26±0.05	3.26±0.04	5.54	0.009**
* p<0.05, ** p<0.01						

Table 5.12 demonstrates that post-intervention Quality of Life scores significantly differed across various cancer-related management methods (p = 0.009), whereas no significant differences were found for Total Mindfulness and Total Self-Management Efficacy scores either before or after the intervention.

**Table 6.** Pearson Correlation of Mindfulness, Self-Management Efficacy, and Quality of Life for Intervention Group after Intervention

		Total Mindfulness Level	Total Self-management Efficacy	Quality of Life
Total Mindfulness Level	Pearson's r	—		
	p-value	—		
Total Self-management Efficacy	Pearson's r	0.05	—	
	p-value	0.77	—	
Quality of Life	Pearson's r	-0.25	-0.19	—
	p-value	0.12	0.253	—
* p<0.05, ** p<0.01				

Table 6 shows that the Pearson correlation coefficients between Total Mindfulness Level, Total Self-Management Efficacy, and Quality of Life after the intervention were not statistically significant ( $p > 0.05$ ), indicating no meaningful relationships among these variables within the intervention group post-intervention.

## 7. DISCUSSION OF RESEARCH RESULTS

The findings indicate that the mindfulness-based nursing intervention significantly improved mindfulness levels, self-management efficacy, and quality of life among participants. Post-intervention, the intervention group demonstrated higher scores in mindfulness dimensions, suggesting enhanced emotional regulation and awareness. Increased self-management efficacy scores imply that participants felt more empowered in managing their health and well-being. Quality of life scores also improved, reflecting the comprehensive benefits of the intervention in both psychological and physical domains.

The intervention's effectiveness across various demographic categories, such as age and educational level, suggests its broad applicability. The absence of significant differences between groups in pre-intervention scores confirms the robustness of the randomization process. Moreover, the lack of correlation between mindfulness, self-management efficacy, and quality of life post-intervention suggests that these variables may operate independently in influencing patients' well-being, warranting further exploration.

## 8. CONCLUSION

The study concludes that mindfulness-based nursing interventions are effective in enhancing mindfulness, self-management efficacy, and quality of life among breast cancer patients. These findings support integrating mindfulness training as a complementary therapy in cancer care. Given the positive outcomes observed, future research should focus on long-term effects and explore the intervention's application in other chronic disease contexts. Limitations include a single-center design and potential biases due to self-reported measures.

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