CHAPTER IV

RESULTS

The results of present study are presented under the following sub-heads:

1. Description of Sociodemographic variables of breast cancer patients undergoing chemotherapy & comparison of Sociodemographic variables for homogeneity between control and experiment group
2. Description of Clinical variables of breast cancer patients undergoing chemotherapy & Comparison of Clinical variables for homogeneity between control and experiment group
3. Effectiveness of yoga on Anxiety, Depression and Stress level of breast cancer patients undergoing chemotherapy
4. Effectiveness of yoga on quality of life (EORTC QLQ C30) of breast cancer patients undergoing chemotherapy
5. Effectiveness of yoga on quality of life (EORTC BR 23) of breast cancer patients undergoing chemotherapy

1. **Description of Sociodemographic variables of breast cancer patients undergoing chemotherapy & comparison of Sociodemographic variables for homogeneity between control and experiment group**

Table 1: Sociodemographic characteristics of breast cancer patients undergoing chemotherapy & comparison between control group and experimental group

Socio-demographic characteristics		Control Group (N=52)		Experimental Group (N=48)		p* Value
		Frequency	Percentage	Frequency	Percentage	
Age (Years)	≤ 45	20	38.46	22	45.83	0.597
	46-60	22	42.31	20	41.67	
	>60	10	19.23	6	12.50	
	Mean±SD	50.73±11.73		48.66±9.69		
Education	No Formal Education	18	34.62	11	22.92	
	Primary	12	23.08	9	18.75	0.245
	10th class	6	11.54	4	8.33	
	12th class	7	13.46	6	12.50	
	Graduation	9	17.31	18	37.50	
Occupation	Home Maker	48	92.31	40	83.33	0.173
	Working	4	7.69	8	16.67	
Source of Income	Agriculture	14	26.92	7	14.58	0.305
	Husband's income	28	53.85	29	60.42	
	Others	10	19.23	12	25	
Marital status	Married	45	86.54	44	91.67	0.413
	Unmarried & widow	7	13.46	4	8.33	
Number of Children	No children	1	1.92	2	4.17	0.177
	One	2	3.85	2	4.17	
	Two	13	25.00	21	43.75	
	>Two	36	69.23	23	47.92	
Living status	Husband & Children	40	76.92	39	8125	0.565
	Husband	3	5.77	4	8.33	
	Others	9	17.31	5	10.42	
Co-morbidity	Not present	37	71.15	34	70.83	0.972
	Present	15	28.85	14	29.17	

Socio-demographic characteristics		Control Group (N=52)		Experimental Group (N=48)		p* Value
		Frequency	Percentage	Frequency	Percentage	
History of Substance Use	Nil	49	94.23	48	100.00	0.240
	Tobacco	2	3.85	0	0	
	Bidi	1	1.92	0	0	
History of Cancer in the family	Yes	8	15.38	16	33.33	**0.036***
	No	44	84.62	32	66.67	
Heard about breast cancer	Yes	18	34.62	25	52.08	0.078
	No	34	65.38	23	47.92	
Place of Living	Uttarakhand	38	73.08	39	81.25	0.332
	Uttar Pradesh	14	26.92	9	18.75	

*=chi-square/Fisher's exact, p<0.05

Table 1: Depicts that out of 100 breast cancer patients (Control n=52; Experiment n=48). In the control group, less than half (42.31%) of the patients were in the age group of 46-60 years and in the experimental group (45.83%) were in ≤ 45 years. Mean age of the control group was 50.730±11.73 and of the experimental group 48.66±9.69. One third (34.61%) of patients in the control group had no formal education and in the experimental group 25% were graduates. The majority of the patients were homemakers, 92.31% in the control and 83.33% in the experimental group respectively. Half of the participants (53.85%) in the control and 60.42% in the experimental group had husband's income as their family's source of income. A majority of the participants were married, 86.53% in the control and 91.66% in the experiment group. Maximum (69.23%) in the control and 47.92% in the experimental group had more than two children. The majority (76.92%) in the control and 81.25% in the experimental group were living with their husband and children. Among the sample, a majority did not have any co morbidity, 71.15% in the control and 70.83% in the experimental group. The majority 94.23% in the control and 100% in the experimental group did not have history of substance use. The majority (84.62%) in the control and 66.67% in the experimental group did not have history of cancer in the family, only 15.38% in the control and 33.33% in the

experimental group were having history of cancer in their family. The majority of the patients (65.38%) in the control group had not heard about breast cancer, whereas 52.08% in the experimental group had heard about breast cancer. The majority of the sample was from the State of Uttarakhand, 73.08% in the control and 81.25% in the experiment group respectively.

Sociodemographic variables were compared between the control and the experimental group for significant differences. Since all data was categorical in nature chi-square/ Fisher's exact tests were performed to find significant differences between groups.

The results showed that with regard to socio-demographic variables, no significant variation was there between the sample in control and experimental groups, such as age ($p=0.597$), education ($p=0.245$), occupation ($p=0.305$), source of income ($p=0.305$), marital status ($p=0.413$), children's number ($p=0.177$), living status ($p=0.565$), co morbidity ($p=0.972$), history of substance use ($p=0.240$), heard about breast cancer ($p=0.078$), place of living ($p=0.332$).Only one variable i.e. history of cancer in the family was significant ($p=0.036$) between the groups.

Hence it could be interpreted that women with breast cancer in both groups were homogeneous in relation to their socio-demographic variables, suggesting that patients in both groups were from the same population.

2. **Description of Clinical variables of breast cancer patients undergoing chemotherapy & Comparison of Clinical variables for homogeneity between control and experiment group.**

Table 2: Clinical variables of breast cancer patients undergoing chemotherapy & comparison between control group and experimental group

Clinical Variables		Control Group (N=52)		Experimental Group (N=48)		p* Value
		Frequency	%	Frequency	%	
Menopausal status	Premenopausal	34	65.38	25	52.08	0.177
	Post Menopausal	18	34.62	23	47.92	
Diagnosis	Infiltrating Ductal carcinoma	51	98.08	45	93.75	0.461
	Invasive Ductal carcinoma	1	1.92	2	4.17	
	Ductal Carcinoma with Neurofibromatosis	0		1	2.08	
Grade	Grade I	3	5.77	6	12.50	**0.026****
	Grade II	40	76.92	41	85.42	
	Grade III	9	17.31	1	2.08	
Time since diagnosis	<1 year	49	94.23	47	97.92	0.347
	1-2years	3	5.77	2	2.08	
Type of Surgery	Lumpectomy	1	1.92	0	0	0.570
	MRM	49	94.23	45	93.75	
	Breast Conservative Surgery	2	3.85	2	4.17	
	Total Mastectomy	0	0	1	2.08	
Chemotherapy Regimen Received	FEC	34	65.38	28	58.33	0.635
	FAC	9	17.31	12	25.00	
	others	9	17.31	8	16.67	

*=chi-square/Fisher's exact, $p<0.05$ ** significant

Table 2: Depicts that out of 100 breast cancer patients, more than half (65.38%) belonging to control group and half 52.8% of experimental group were premenopausal. Less than half were post menopausal (34.61 %) in control and 47.92% in experiment group respectively. The majority (98.08%) in the control group and (93.75%) of

experimental group were diagnosed with Infiltrating Ductal Carcinoma. The majority in the control (76.92%) and in the experiment group (85.42%) were having breast cancer for less than one year. The majority (94.23%) of the sample in the control and (93.75%) in the experimental group had surgery i.e Modified Radical Mastectomy. More than half sample (65.38%) in the control and (58.33%) in the experimental groups had received FEC (Fluorouracil (5-FU), Epirubicine and Cyclophosphamide) regimen of chemotherapy.

Clinical variables of study participants in the control and the experimental groups were compared for significant differences. Since all data was categorical in nature chi-square/ Fisher's exact tests were performed to find significant differences.

The results indicated that patients in both groups had no significant difference, menopausal state (p=0.177), diagnosis (p=0.461), time since diagnosis (p=0.347), type of surgery (p=0.570), and chemotherapy regimen (p=0.635).

Only one variable i.e. Grade of cancer was significant (p=0.026) between the groups.

Hence based on the results it could be interpreted that breast cancer patients in both groups were homogeneous in relation to their clinical variables suggesting that patients in both groups were from the same population.

3. Effectiveness of yoga on Anxiety, Depression and Stress level of breast cancer patients undergoing chemotherapy

Ho$_1$- There would be no significant difference in stress level scores of breast cancer patients undergoing chemotherapy, in the experimental and the control groups after implementation of Yoga.

H$_1$- There would be a significant decrease in the stress level scores of breast cancer patients undergoing chemotherapy, in the experimental group compared to those in the control group after implementation of Yoga, at $p<0.05$ level of significance.

Table 3.1: Comparison of Anxiety, depression and stress scores between control group and experimental groups at the baseline (cycle one)

S. No	Subscales	Control Group N=52		Experimental Group N=48		P* value
		Mean±SD	Median (minimum-maximum)	Mean±SD	Median (minimum-maximum)	
1	Anxiety	3.78±2.12	3 (1-11)	3.27±2.11	3(1-14)	0.098
2	Depression	4.82± 2.28	4.5(2-13)	4.60±2.27	4 (2-13)	0.508
3	Stress	2.5±1.73	2(0-8)	2.85±1.68	2 (0-9)	0.169

*Wilcoxon rank-sum (Mann-Whitney) test, $p<0.05$

Table 3.1 shows that at baseline (cycle one) participants in both groups (control and experiment) had similar anxiety, depression and stress mean & median scores.

Therefore it could be inferred that patients in both the groups were homogenous with regard to anxiety depression and stress scores at baseline i.e. first cycle of chemotherapy, suggesting that the patients in both groups were from the same population. Therefore any changes in the results could be interpreted with assurance that it was due to the yoga intervention.

Table 3.2 Comparison of (ADSS) Anxiety subscale within and between control group and experimental group of breast cancer patients undergoing Chemotherapy

Chemotherapy Cycles & No. of patients in Control and Experimental Groups	Anxiety Subscale			
	Control Group Mean±SD Median (minimum-maximum)	Experimental Group Mean±SD Median (minimum-maximum)	Deference (95% Confi. Internal)	p* Value Mann-Whitney Test
Cycle I (N=100) Control=52 Exp=48	3.78±2.12 3(1-11)	3.14±1.96 3(1-14)	0.64 (-0.17, 1.45)	0.10
Cycle II (N=98) Control=51 Exp=47	4.41±3.05 3(2-17)	3.46±2.85 2(1-16)	0.94 (-0.24, 2.13)	**0.0113****
Cycle III (N=96) Control=50 Exp=46	4.58 ±3.55 4(1-19)	3.52± 2.95 2(2-18)	1.05 (- 0.27, 2.38)	**0.0235****
Cycle IV (N=93) Control=47 Exp=46	3.93± 2.91 3(0-14)	3.41± 2.39 3(2-12)	0.52 (-0.56, 1.61)	0.421
Cycle V (N=84) Control=42 Exp=42	3.92± 2.89 3(1-13)	3.40± 3.13 2(2-18)	0.52 (-0.78, 1.83)	0.133
Cycle VI (N=83) Control=42 Exp=41	4.30 ±3.32 3(1-15)	3.48 ±3.05 2(2-14)	0.82 (-0.57, 2.21)	**0.022****
P value Friedman test	**<0.000**	**<0.000**		

*p<0.05   **Significant

Table 3.2 depicts that the control group's mean anxiety scores increased slightly from the first cycle, in the second & third cycles and decreased in the fourth & fifth cycles and again increased in the sixth cycle, showing significant within the group difference. However the experimental group's anxiety scores remained almost same throughout six cycles. The experimental group had statistically significant difference than control group in second, third and sixth cycles (p 0.01, p 0.02, p 0.02). It could be inferred that yoga was effective in maintaining the lower level of anxiety in breast cancer clients who were receiving chemotherapy in the experimental group.

Table 3.3 Comparison of (ADSS) Depression subscale within and between control group and experimental group of breast cancer patients undergoing Chemotherapy

Chemotherapy Cycles & No. of patients in Control and Experimental Groups	Depression Subscale			
	Control Group Mean±SD Median (minimum-maximum)	Experimental Group Mean±SD Median (minimum-maximum)	Deference (95% Confi. Internal)	p* Value Mann-Whitney Test
Cycle I (N=100) Control=52 Exp=48	4.82± 2.28 4.5(2-13)	4.60±2.27 4(2-13)	0.22 (-0.68, 1.12)	0.508
Cycle II (N=98) Control=51 Exp=47	4.43± 3.86 3(1-14)	2.82± 3.42# 1(1-13)	1.60 (0.13, 3.07)	**0.0208****
Cycle III (N=96) Control=50 Exp=46	4.8± 4.04 4.5(0-15)	3.19± 3.72# 2(0-13)	1.60 (0.02,3.18	**0.0278****
Cycle IV (N=93) Control=47 Exp=46	4.42± 3.99 4(0-14)	2.63± 2.81# 2(0-10)	1.79 (0.38, 3.21)	**0.026****
Cycle V (N=84) Control=42 Exp=42	4.61± 3.83 4.5(0-14)	2.33± 3.35# 1(0-12)	2.28 (0.72,3.85)	**0.0014****
Cycle VI (N=83) Control=42 Exp=41	4.66 ±4.25 3.5(0-14)	2± 2.71# 1(0-9)	2.66 (1.10, 4.22)	**0.0009****
P value Friedman test	**<.000**	**<.000**		

* $p<0.05$ ***Significant**   **#Wilcoxon Signed Rank test (significant)**

Table 3.3 depicts that mean depression scores in the control group was almost same over a period of six cycles. However in the experimental group the depression scores decreased significantly in cycle two, three, four, five and six from the baseline score. The patients in the experimental group differed significantly from the control group in the second, third, fourth, fifth and sixth cycles of chemotherapy (p0.02, p 0.02, p 0.02, p0.001, p0.000) respectively. It was interpreted that yoga was effective in decreasing symptoms of depression in patients of the experimental group going through chemotherapy.
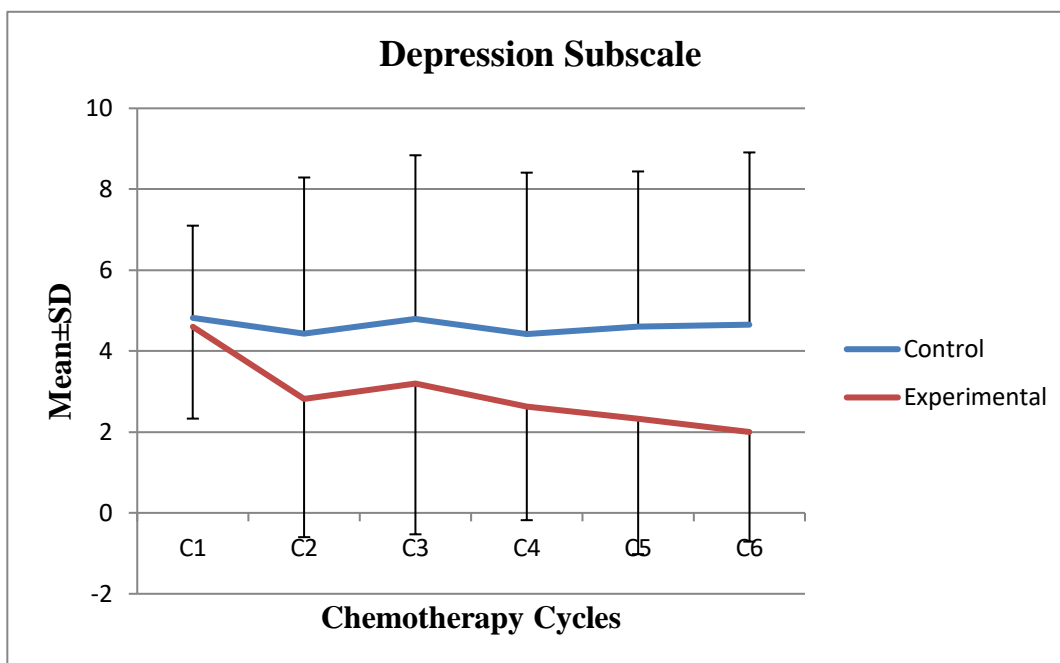
Figure 8. Line graph showing comparison of Mean ±SD of Depression scores between control and experiment group

Table 3.4: Comparison of (ADSS) Stress subscale within and between control group and experimental group of breast cancer patients undergoing Chemotherapy

Chemotherapy Cycles & No. of patients in Control and Experimental Groups	Stress Subscale			
	Control Group Mean±SD Median (minimum-maximum)	Experimental Group Mean±SD Median (minimum-maximum)	Deference (95% Confi. Internal)	p* Value Mann-Whitney Test
Cycle I (N=100) Control=52 Exp=48	2.5±1.73 2(0-8)	2.85±1.68 2(0-9)	-0.35 (-1.03, 0.32)	0.169
Cycle II (N=98) Control=51 Exp=47	2.88± 2.55 3(1-13)	2.27± 2.55# 2(1-11)	0.60 (-0.41, 1.63)	0.1201
Cycle III (N=96) Control=50 Exp=46	3.48± 2.98 3(0-14)#	2.36± 2.83 1.5(0-10)#	1.11 (-0.07, 2.29)	**0.016****
Cycle IV (N=93) Control=47 Exp=46	3.28± 2.76 3(0-12)#	2.65± 2.60 2(0-10)	0.63 (-0.46, 1.72)	0.184
Cycle V (N=84) Control=42 Exp=42	3± 2.60 3(0-12)	2.09± 2.49 1(0-10)#	0.90 (-0.20, 2.01)	0.086
Cycle VI (N=83) Control=42 Exp=41	3.11± 2.72 2(0-10)	2.31± 2.67 1(0-9)	0.80 (-0.37, 1.98)	0.099
P value Friedman test	**<.0001****	**<.0001****		

* p<0.05   **Significant   #Wilcoxon Signed Rank test (significant)

Table 3.4 Shows that mean stress score in the control group increased significantly in the third and fourth cycles from the baseline score. In the experimental group the scores differed statistically from the baseline score in the second, third and fifth cycles. The patients in the experimental group differed significantly from the control group in the third cycle (p 0.01) only. It could be inferred that yoga was effective in maintaining symptoms of lower level of stress in patients who were in the experimental group.

The results revealed that at the baseline participants of both groups had symptoms of lower level of anxiety, depression and stress. But as the chemotherapy cycles continued the participants in the control group had higher level of anxiety, depression and stress where as the patients in the experimental group had same lower levels of anxiety and stress and decrease in depression. Therefore it could be interpreted that yoga was effective in maintaining lower levels anxiety & stress and in decreasing symptoms of depression in patients undergoing chemotherapy in the experimental group in than control group.

Therefore the researcher accepted the null hypothesis that there would be no significant difference in stress and anxiety level scores of breast cancer patients going through chemotherapy, in the experimental and the control groups after implementation of yoga.

However there was significant difference in depression scores of breast cancer patients going through chemotherapy, in the experimental group after implementation of yoga compared to the control group.

4. Effectiveness of yoga on quality of life (EORTC QLQ C-30) of breast cancer patients undergoing chemotherapy.

Table 4.1: Comparison of quality of life (EORTC QLQ C-30) between control group and experimental group at the baseline (cycle one of chemotherapy)

S. No	Domains Of Quality of Life	Control Group(N=52)		Experimental Group(N=48)		p* value
		Mean±SD	Median (minimum-maximum)	Mean±SD	Median (minimum-maximum)	
1	**Global Health Status**	64.26±7.62	66.66 (50-83.33)	66.14±9.16	66.66 (50-83.33)	0.263
			Functional scales			
1	Physical function	72.30±8.49	73.33 (60-86.66)	72.63±5.71	73.33 (60-80)	0.503
2	Role function	66.98± 14.19	66.66 (50-100)	69.09± 11.90	66.66 (33.33-83.33)	0.18
3	Emotional function	58.81± 16.11	58.33 (16-100)	60.41± 12.69	66.66 (33.33-91.66)	0.373
4	Cognitive function	93.26± 13.30	100 (50-100)	92.01±11.90	100 (66.66-100)	0.4136
5	Social function	58.33± 16.99	50 (33.33-100)	59.02± 14.56	66.66 (33.33-83.33)	0.408
			Symptom scales			
1	Fatigue	30.34±15.10	33.33 (0-77.77)	26.15±15.62	33.33(0-55.55)	0.211
2	Nausea Vomiting	0.32±2.31	0 (0-16.66)	0	0	0.3367
3	Pain	25.32±14.19	33.33 (0-50)	22.91±14.83	33.33 (0-50)	0.412
4	Dyspnea	4.487±11.48	0 (0-33.33)	4.86±11.88	0 (0-33.33)	0.8723
5	Insomnia	14.74±19.14	0 (0-66.66)	11.80±21.18	0 (0-100)	0.254
6	Appetite loss	10.25± 16.87	0 (0-66.66)	9.02± 14.96	0 (0-33.33)	0.800
7	Constipation	1.92±7.84	0 (0-33.33)	0.69±4.81	0 (0-33.33)	0.3498
8	Diarrhea	0	0	0.69±4.81	0 (0-33.33)	0.2980
9	Financial Difficulty	68.58±34.56	66.66 (0-100)	65.27±38.87	66.66 (0-100)	0.7497

* Mann-Whitney test, $p < 0.05$

Table 4.1 reveals that at the baseline, patients in the control and the experimental groups were having almost similar quality of life scores; no significant differentiation existed among the groups.

Global Health Status (p=0.263), Functional Scales- Physical function, the p value for control and experiment was (0.503), role function (0.18), emotional function (0.373), cognitive function (0.4136), social function (0.408).

The Symptom Scales– Fatigue (0.211), Nausea Vomiting (0.336), Pain (0.412), Dyspnea (0.872), Insomnia (0.254), Appetite loss (0.800), Constipation (0.349), Diarrhea (0.2980), financial difficulty (0.749)

Therefore it could be inferred that breast cancer patients in both groups were similar in their quality of life scores at baseline i.e. first cycle of chemotherapy, signifying that the patients in both groups were from a similar population. Therefore any variation in the results could be interpreted with assurance that changes were possibly because of yoga practices.

Comparison of Quality of Life (EORTC QLQ C-30) of Global Health Status, Functional Scales & symptom scales between the control group and the experimental group of breast cancer patients undergoing chemotherapy.

Ho$_2$- There would be no significant difference in the quality of life scores of breast cancer patients undergoing chemotherapy, in experimental and control groups after implementation of Yoga.

H$_2$- There would be a significant improvement in the quality of life scores of breast cancer patients undergoing chemotherapy, in the experimental group compared to those in the control group after implementation of Yoga, at $p < 0.05$ level of significance.

As the data was skewed at some time point or cycles, Repeated Measure ANNOVA was not used to compare the mean instead the non parametric Mann-Whitney test was used to evaluate two groups and estimate p value. Within group effect was estimated by Friedman test. Wilcoxon Signed rank test was computed to find the difference from the baseline score. Since, it was an experimental trial; confidence interval was estimated by using independent "t" test as per the CONSORT guidelines. $P < 0.05$ was considered as statistical significant results.

For the Global Health Status (GHS) scale and Functioning Scales, a higher score represented a better quality of life and lower score to a poor quality of life.

Symptom scales- The higher score correspond to greater symptoms, indicating a poor quality of life. Lower scores represented fewer symptoms and indicated a better quality of life.

Table 4.2 Comparison of Quality of Life (EORTC QLQ C-30) Global Health Status within and between Control group and Experimental group of breast cancer patients undergoing chemotherapy

Chemotherapy Cycles & No. of patients in Control and Experimental Groups	Global Health Status			
	Control Group Mean±SD Median (minimum-maximum)	Experimental Group Mean±SD Median (minimum-maximum)	Deference (95% Confi. Internal)	p* Value Mann-Whitney Test
Cycle I (N=100) Control=52 Exp=48	64.26±7.62 66.66 (50-83.33)	66. 14±9.16 66.66 (50-83.33)	-1.88 (-5.21, 1.45)	0.263
Cycle II (N=98) Control=51 Exp=47	59.96±10.93 58.33# (33.33-83.33)	65.78±12.79 66.66 (33.33-100)	-5.81 (-10.57, -1.05)	**0.0306****
Cycle III (N=96) Control=50 Exp=46	58.66±11.65 58.33# (33.33-83.33)	62.86±8.90 58.33# (33.33-83.33)	-4.19 (-8.42, 0 .036)	**0.0362****
Cycle IV (N=93) Control=47 Exp=46	56.38±14.13 50# (33.33-100)	65.21±10.58 66.66 (41.66-83.33)	-8.83 (-13.98, -3.68)	**0.0003****
Cycle V (N=84) Control=42 Exp=42	56.74±11.38 54.16# (33.33-83.33)	68.45±10.65 66.66 (33.33-83.33)	-11.70 (-16.49, -6.91)	**0.0000****
Cycle VI (N=83) Control=42 Exp=41	59.32±13.04 58.33# (25-83.33)	69.10±15.05 66.66 (0-83.33)	-9.78 (-15.92, -3.63)	**0.0001****
P value Friedman test	**<.0001**	**<.0001**		

* p<0.05   **Significant   **#Wilcoxon Signed Rank test (significant)**

Table 4.2 & Figure 4 depict that mean global health status scores of control group reduced significantly from the baseline in second, third, fourth, fifth and the sixth cycles. A slight increase was observed in the sixth cycle. The experimental group's average scores reduced significantly from the baseline score in the third cycle. The experimental group had statistically significant difference from control group in second, third, fourth, fifth and the sixth cycles (p 0.03, p 0.03, p 0.003, p 0.000, p 0.001) respectively. Therefore it could be inferred that as participants in the experimental group continued practicing yoga their global health status scores improved during the period of chemotherapy.

Table 4.3 Comparison of Quality of Life (QLQ C-30) Functional Scales-Physical Function, within and between Control group and Experimental group of breast cancer patients undergoing chemotherapy

Chemotherapy Cycles & No. of patients in Control and Experimental Groups	Physical Function			
	Control Group Mean±SD Median (minimum-maximum)	Experimental Group Mean±SD Median (minimum-maximum)	Deference (95% Confi. Internal)	p* Value Mann-Whitney Test
Cycle I (N=100) Control=52 Exp=48	72.30±8.49 73.33 (60 - 86.66)	72.63±5.71 73.33 (60 - 80)	-0.33 (-3.22, 2.56)	0.503
Cycle II (N=98) Control=51 Exp=47	64.96±15.36 66.66# (20-93.33)	71.06±13.06 73.33 (33.33-100)	-6.09 (-11.83, -0.35)	0.0523
Cycle III (N=96) Control=50 Exp=46	60.26±18.01 60# (13.33-93.33)	69.13±15.41 73.33 (20-93.33)	-8.86 (-15.68, -2.03)	**0.0074****
Cycle IV (N=93) Control=47 Exp=46	57.73±23.02 60# (13.33-100)	66.37±14.53 70# (20-86.66)	-8.64 (-16.59, -0.69)	0.0720
Cycle V (N=84) Control=42 Exp=42	54.28±19.51 53.33# (20-93.33)	69.84±15.94 73.33 (33.33-93.33)	-15.55 (-23.28, -7.82)	**0.0002****
Cycle VI (N=83) Control=42 Exp=41	53.80±20.42 53.33# (6.66-100	68.45±16.26 73.33 (26.66-93.33)	-14.64 (-22.72,-6.57)	**0.0007****
P value Friedman test	**<.0001****	**<.0001****		

* p<0.05   ** Significant   #Wilcoxon Signed Rank test (significant)

Table 4.3 & Figure 5 depict that physical function mean scores of control group declined significantly from the baseline score in second, third, fourth, fifth and the sixth cycles. However the mean scores of the experiment group declined significantly from the baseline score in the fourth cycle only. The experiment group had statistically significant difference from the control group in cycle three, five and six (p 0.007, p 0.0002, p 0.0007). It concluded that yoga was helpful in enhancing the physical function of women who were going through chemotherapy in the experiment group.

Table 4.4 Comparison of Quality of Life (QLQ C-30) Functional Scales- Role Function, within and between Control group and Experimental group of breast cancer patients undergoing chemotherapy

Chemotherapy Cycles & No. of patients in Control and Experimental Groups	Role Function			
	Control Group Mean±SD Median (minimum-maximum)	Experimental Group Mean±SD Median (minimum-maximum)	Deference (95% Confi. Internal)	p* Value Mann-Whitney Test
Cycle I (N=100) Control=52 Exp=48	66.98±14.19 66.66 (50-100)	69.09±11.90 66.66 (33.33-83.33	-2.11 (-7.33, 3.11)	0.182
Cycle II (N=98) Control=51 Exp=47	59.15±23.64 50# (33.33-100)	71.27±24.50 66.66 (16.66-100)	-12.12 (-21.78, -2.47)	0.0124**
Cycle III (N=96) Control=50 Exp=46	56± 23.02 50# (16.66-100)	66.30±25.69 66.66 (0-100)	-10.30 (-20.17, -0.43)	0.0315**
Cycle IV (N=93) Control=47 Exp=46	53.19±24.23 50# (0-100)	66.30±23.95 66.66 (0-100)	-13.11 (-23.04, -3.18)	0.0038**
Cycle V (N=84) Control=42 Exp=42	50.79±21.76 50# (0-100)	70.23±23.72 66.66 (0-100)	-19.44 (-29.32, -9.56)	0.0001**
Cycle VI (N=83) Control=42 Exp=41	51.58±20.76 50# (16.66-100)	70.32±23.72 66.66 (16.66-100)	-18.73 (-28.46, -9.00)	0.0003**
P value Friedman test	<0.0001**	<0.0001**		

* $p < 0.05$ ** Significant #Wilcoxon Signed Rank test (significant)

Table 4.4 & Figure 6 show that control group's role function means scores reduced significantly from the baseline score in the second, third, fourth, fifth and six cycles. The experimental group's mean scores were similar to the baseline score all through the six cycles of chemotherapy. Statistically significant difference between experimental and control group was in the second, third, fourth, fifth and sixth cycles of chemotherapy (p 0.01, p 0.03, p 0.003, p 0.0001, 0.0003) respectively. It was concluded that yoga was helpful in enhancing the role function of women going through chemotherapy in the experimental group for breast cancer.

Table 4.5 Comparison of Quality of Life (QLQ C-30) Functional Scales- Emotional Function, within and between Control group and Experimental group of breast cancer patients undergoing chemotherapy

Chemotherapy Cycles & No. of patients in Control and Experimental Groups	Emotional Function			
	Control Group Mean±SD Median (minimum-maximum)	Experimental Group Mean±SD Median (minimum-maximum)	Deference (95% Confi. Internal)	p* Value Mann-Whitney Test
Cycle I (N=100) Control=52 Exp=48	58.81±16.11 58.33 (16.66-100)	60.41±12.69 58.33 (33.33-93.33)	-1.60 (-7.39, 4.18)	0.503
Cycle II (N=98) Control=51 Exp=47	53.92±26.31 50 (8.33-100)	56.38±13.14. 66.66 (8.33-100)	-2.46 (-10.91,5.99)	0.248
Cycle III (N=96) Control=50 Exp=46	51.33±25.55 50# (0-100)	52.17±24.08 50# (16.66-66.66)	-0.84 (-9.32, 7.63)	0.517
Cycle IV (N=93) Control=47 Exp=46	46.27±26.22 41.66# (0-100)	50.36±10.53 50# (8.33-58.33)	-4.08 (-12.35, 4.18)	0.112
Cycle V (N=84) Control=42 Exp=42	46.23±24.22 50# (0-100)	54.16± 5.89 58.33# (41.66-66.66)	-7.93 (-15.58, -0.28)	0.063
Cycle VI (N=83) Control=42 Exp=41	44.84±25.36 45.83# (0-100)	53.25±6.94 58.33# (33.33-58.33)	-8.41 (-16.57, -0.24)	0.058
P value Friedman test	<.0.0001**	<0.0001**		

* p<0.05   #Wilcoxon Signed Rank test (significant)

Table 4.5 & Figure 7 depicts that emotional function mean scores of control and experiment group reduced significantly from the baseline score in third, fourth, fifth and the sixth cycles. The decrease in scores was more in the control group than experimental group. The experimental group demonstrated statistically significant difference from control group in sixth cycle (p 0 .05). It could be concluded that yoga was helpful in improving the emotional function of women who were going through chemotherapy in the experimental group.

Table 4.6 Comparison of Quality of Life (EORTC QLQ C-30) Functional Scales-Cognitive Function, within and between Control group and Experimental group of breast cancer patients undergoing chemotherapy

Chemotherapy Cycles & No. of patients in Control and Experimental Groups	Cognitive Function			
	Control Group Mean±SD Median (minimum-maximum)	Experimental Group Mean±SD Median (minimum-maximum)	Deference (95% Confi. Internal)	p* Value Mann-Whitney Test
Cycle I (N=100) Control=52 Exp=48	93.26±13.30 100 (50-100)	92.01±11.90 100 (66.66-100)	1.25 (-3.77, 6.28)	0.373
Cycle II (N=98) Control=51 Exp=47	80.39±23.02 83.33# (0-100)	82.97±21.27 83.33# (33.33-100)	-2.58 (-11.49, 6.32)	0.5385
Cycle III (N=96) Control=50 Exp=46	76.33±22.85 83.33# (16.66-100)	78.62±21.84 83.33# (16.66-100	-2.28 (-11.36, 6.78)	0.6212
Cycle IV (N=93) Control=47 Exp=46	65.95±25.76 66.66# (0-100)	70.28±27.19 66.66# (0-100)	-4.33 (-15.24, 6.57)	0.3590
Cycle V (N=84) Control=42 Exp=42	66.66±25.76 66.66# (16.66-100)	77.77±24.87 83.33# (0-100)	-11.11 (-22.10, -0.11)	**0.0333****
Cycle VI (N=83) Control=42 Exp=41	62.69±30.97 66.66# (0-100)	75.20±23.31 83.33# (33.33-100)	-12.50 (-24.49, -0.51)	0.0717
P value Friedman test	**<0.0001****	**<0.0001****		

* $p<0.05$ ** Significant   #Wilcoxon Signed Rank test (significant)

Table 4.6 shows cognitive function mean scores of control group reduced significantly from the baseline score in the 2nd, 3rd, 4th, 5th and 6th cycles. The experimental group's mean scores decreased significantly from the baseline in the 2nd, 3rd, 4th, 5th and 6th cycles. Statistically significant difference between experimental and control group was in the fifth cycle (p 0.03). It could be concluded that yoga was effective in improving the cognitive function of women with carcinoma of breast going through chemotherapy in the experimental group.

Table 4.7 Comparison of Quality of Life (EORTC QLQ C-30) Functional Scales-Social Function, within and between Control group and Experimental group of breast cancer patients undergoing chemotherapy

Chemotherapy Cycles & No. of patients in Control and Experimental Groups	Social Function			
	Control Group Mean±SD Median (minimum-maximum)	Experimental Group Mean±SD Median (minimum-maximum)	Deference (95% Confi. Internal)	p* Value Mann-Whitney Test
Cycle I (N=100) Control=52 Exp=48	58.33±16.99 50 (33.33-100)	59.02±14.56 66.66 (33.33-83.33)	-0.69 (-7.00, 5.61)	0.408
Cycle II (N=98) Control=51 Exp=47	49.01±24.58 33.33# (16.66-100)	50±15.92 50# (16.66-83.33)	-0.98 (-9.36, 7.40)	0.296
Cycle III (N=96) Control=50 Exp=46	45.83±27.19 33.33# (0-100)	46.01± 14.98 50# (16.66-66.66)	-0.18 (-9.14, 8.78)	0.274
Cycle IV (N=93) Control=47 Exp=46	40.42±21.90 33.33# (0-100)	41.30±10.38 50# (16.66-66.66)	-0.87 (-7.96, 6.20)	0.212
Cycle V (N=84) Control=42 Exp=42	40.07±19.84 33.33# (0-83.33)	43.65± 17.63 50# (0-100	-3.57 (-11.72, 4.57)	0.166
Cycle VI (N=83) Control=42 Exp=41	37.69 ±20.51 33.33# (0-83.33)	44.30±12.69 50# (16.66-66.66)	-6.61 (-14.08, 0.86)	0.074
P value Friedman test	**<0.0001**	**<0.0001**		

* p<0.05   #Wilcoxon Signed Rank test (significant)

Table 4.7 shows social function mean scores of control group reduced significantly from the baseline score in the 2nd, 3rd, 4th, 5th and 6th cycles. The experimental group's scores decreased significantly from the baseline score in the second, third, fourth, fifth and sixth cycles. No statistically significant differentiation existed between scores of both groups in any cycle of chemotherapy. It could be inferred that yoga had no effect on social function of breast cancer patients undergoing chemotherapy.

Table 4.8 Comparison of Quality of Life (EORTC QLQ C-30) Symptom Scales-Fatigue, within and between Control group and Experimental group of breast cancer patients undergoing chemotherapy

Chemotherapy Cycles & No. of patients in Control and Experimental Groups	Symptom scale-Fatigue			
	Control Group Mean±SD Median (minimum-maximum)	Experimental Group Mean±SD Median (minimum-maximum)	Deference (95% Confi. Internal)	p* Value Mann-Whitney Test
Cycle I (N=100) Control=52 Exp=48	30. 34 ± 15.10 33.33 (0-77.77)	26.15±15.62 33.33 (0-55.55)	4.18 (-1.91, 10.28)	0.211
Cycle II (N=98) Control=51 Exp=47	51.19± 17.78 55.55# (0-88.88)	38.29±22.19 33.33# (0-88.88)	12.90 (4.86, 20.93	**0.0018****
Cycle III (N=96) Control=50 Exp=46	56±17.95 55.55# (11.11-100)	42.27±23.02 33.33# (11.11-100)	13.72 (5.39, 22.06)	**0.0020****
Cycle IV (N=93) Control=47 Exp=46	62.41±23.80 66.66# (0-100)	46.37±23.45 33.33# (0-100)	16.03 (6.29, 25.77	**0.0018****
Cycle V (N=84) Control=42 Exp=42	62.69±20.50 66.66# (22.22-100)	42.85±23.48 33.33# (0-100)	19.84 (10.27, 29.41)	**0.0002****
Cycle VI (N=83) Control=42 Exp=41	65.07±21.47 66.66# (11.11-100)	43.08±20.36 33.33# (0-88.88)	21.98 (12.84, 31.13)	**0.0000****
P value Friedman test	**<0.0001***	**<0.0001***		

* p<0.05   ** Significant   #Wilcoxon Signed Rank test (significant)

Table 4.8 & Figure 8 show mean fatigue scores of control group increased significantly from the baseline score in the 2nd, 3rd, 4th, 5th and 6th cycles of chemotherapy. The mean scores of the experimental group also increased significantly from the baseline score in the 2nd, 3rd, 4th, 5th and 6th cycles of chemotherapy. The experimental group showed statistically significant difference from control group in the second, third, fourth, fifth and sixth cycles of chemotherapy (p 0.001, p 0.002, p 0.001,p 0.0002, p 0.0000) respectively. It could be concluded that yoga was helpful in relieving the fatigue of women who were undergoing chemotherapy for breast cancer in the experimental group.

Table 4.9 Comparison of Quality of Life (EORTC QLQ C-30) Symptom Scales-Nausea Vomiting, within and between Control group and Experimental group of breast cancer patients undergoing chemotherapy

Chemotherapy Cycles & No. of patients in Control and Experimental Groups	Symptom Scale-Nausea Vomiting			
	Control Group Mean±SD Median (minimum-maximum)	Experimental Group Mean±SD Median (minimum-maximum)	Deference (95% Confi. Internal)	p* Value Mann-Whitney Test
Cycle I (N=100) Control=52 Exp=48	0.32±2.31 0(0-16.66)	0	0.32 (-0.34, 0.98)	0.33
Cycle II (N=98) Control=51 Exp=47	14.05±26.11# 0(0-100)	6.02±10.08 0(0-33.33)#	8.02 (-0.042, 16.09)	0.3113
Cycle III (N=96) Control=50 Exp=46	11±16.01# 0(0-66.66)	5.07±11.03 0(0-33.33)#	5.92 (0.30, 11.54)	**0.0255****
Cycle IV (N=93) Control=47 Exp=46	13.82±21.51# 0(0-100)	7.97±16 0(0-66.66)#	5.85 (-1.96, 13.68)	0.1246
Cycle V (N=84) Control=42 Exp=42	11.50±16.25# 0(0-66.66)	7.14±13.84 0(0-66.66)#	4.36 (-2.18, 10.91)	0.1481
Cycle VI (N=83) Control=42 Exp=41	7.93±12.87# 0(0-33.33)	5.28±13.14 0(0-66.66)#	2.65 (-3.03, 8.33)	0.2156
P value Friedman test	**<0.0001****	**<0.0001****		

 * $p<0.05$ ***Significant**   #Wilcoxon Signed Rank test (significant

Table 4.9 shows in the control group the mean scores of nausea and vomiting increased significantly from the baseline score in the 2nd, 3rd, 4th, 5th and 6th cycles. The mean scores in the experiment group also increased significantly from the baseline in the 2nd, 3rd, 4th, 5th and 6th cycle. The experimental group significantly differed from the control group in cycle three (p 0.02). It could be inferred that yoga was helpful in decreasing the nausea and vomiting of breast cancer patients going through chemotherapy in the experimental group.

Table 4.10 **Comparison of Quality of Life (EORTC QLQ C-30) Symptom Scales-Pain, within and between Control group and Experimental group of breast cancer patients undergoing chemotherapy**

Chemotherapy Cycles & No. of patients in Control and Experimental Groups	Symptom Scale-Pain			
	Control Group Mean±SD Median (minimum-maximum)	Experimental Group Mean±SD Median (minimum-maximum)	Deference (95% Confi. Internal)	p* Value Mann-Whitney Test
Cycle I (N=100) Control=52 Exp=48	25.32±14.19 33.33 (0-50)	22.91±14.83 33.33 (0-50)	2.40 (-3.35, 8.16)	0.412
Cycle II (N=98) Control=51 Exp=47	33±22.23 33.33# (0-83.33)	25.53±18.98 33.33 (0-66.66	7.47 (-0.85, 15.79	0.1054
Cycle III (N=96) Control=50 Exp=46	30.66± 19.73 33.33 (0-83.33)	25± 18.17 16.66 (0-66.66)	5.66 (-2.04, 13.37	0.1732
Cycle IV (N=93) Control=47 Exp=46	29.43±18.78 33.33 (0-100)	31.15±23.20 33.33# (0-100	-1.72 (-10.41, 6.95)	0.7524
Cycle V (N=84) Control=42 Exp=42	33.33± 22.08 33.33# (0-83.33)	25 ±23.06 25 (0-100)	8.33 (-1.46, 18.13)	0.0594
Cycle VI (N=83) Control=42 Exp=41	35.71±23.44 33.33# (0-83.33)	28.45±22.74 33.33 (0-83.33)	7.25 (-2.83, 17.35)	0.1623
P value Friedman test	**<0.0001****	**<0.0001****		

 * p<0.05   ** Significant   #Wilcoxon Signed Rank test (significant)

Table 4.10 shows mean pain score of the control group increased significantly from the baseline score in the second, fifth and the sixth cycles. In experimental group scores increased significantly in the fourth cycle. Both groups did not differ significantly in any of the cycles. It could be inferred that yoga had no effect on pain level of women with breast cancer who were undergoing chemotherapy.

Table 4.11 Comparison of Quality of Life (EORTC QLQ C-30) Symptom Scales-Dyspnea, within and between Control group and Experimental group of breast cancer patients undergoing chemotherapy

Chemotherapy Cycles & No. of patients in Control and Experimental Groups	Symptom Scale-Dyspnea			
	Control Group Mean±SD Median (minimum-maximum)	Experimental Group Mean±SD Median (minimum-maximum)	Deference (95% Confi. Internal)	p* Value Mann-Whitney Test
Cycle I (N=100) Control=52 Exp=48	4.48±11.48 0(0-33.33)	4.86±11.88 0(0-33.33)	-0.37 (-5.01, 4.26)	0.872
Cycle II (N=98) Control=51 Exp=47	33.00± 22.23 33.33# (0-83.33)	25.53± 18.98 33.33(0-66.66)#	7.47 (0.85, 15.79	0.1054
Cycle III (N=96) Control=50 Exp=46	6±12.93 0(0-33.33)	5.79±14.57 0(0-66.66)	0.20 (5.37, 5.77)	0.7549
Cycle IV (N=93) Control=47 Exp=46	11.34±24.35 0(0-100)	4.34±15 0(0-66.66)	6.99 (-1.36, 15.36)	0.0608
Cycle V (N=84) Control=42 Exp=42	7.14±13.84 0(0-33.33)	3.17±12.34 0(0-66.66)	3.96 (-1.72, 9.66)	0.0732
Cycle VI (N=83) Control=42 Exp=41	7.14±17.32 0(0-66.66)	2.43± 8.78 0(0-33.33)	4.70 (-1.31, 10.72)	0.1780
P value Friedman test	**<0.0001**	**<0.0001**		

* $p<0.05$ #Wilcoxon Signed Rank test (significant)

Table 4.11 shows mean dyspnea scores in the control group increased significantly from the baseline score in the second cycle. In the experimental group also scores increased significantly from the baseline in the second cycle then there was decline in scores in both groups. No statistically significant differentiation was observed among both groups regarding dyspnea scores in any of the cycles. However there was more decrease in score within the experimental group than control group

Table 4.12 Comparison of Quality of Life (EORTC QLQ C-30) Symptom Scales-Insomnia, within and between Control group and Experimental group of breast cancer patients undergoing chemotherapy

Chemotherapy Cycles & No. of patients in Control and Experimental Groups	Symptom Scale- Insomnia			
	Control Group Mean±SD Median (minimum-maximum)	Experimental Group Mean±SD Median (minimum-maximum)	Deference (95% Confi. Internal)	p* Value Mann-Whitney Test
Cycle I (N=100) Control=52 Exp=48	14.74±19.14 0(0-66.66)	11.80±21.18 0(0-100)	2.93 (-5.06, 10.94)	0.274
Cycle II (N=98) Control=51 Exp=47	26.79± 29.07 33.33# (0-100)	21.98± 31.29 0(0-100)#	4.81 (-7.29, 16.91	0.2844
Cycle III (N=96) Control=50 Exp=46	30 ± 25.42 33.33# (0-66.66)	21.73±27.41 0(0-100)#	8.26 (-2.44, 18.96)	0.0799
Cycle IV (N=93) Control=47 Exp=46	37.58 ±35.85 33.33# (0-100)	27.53±31.66 33.33 (0-100)#	10.05 (-3.89, 23.99)	0.1682
Cycle V (N=84) Control=42 Exp=42	35.71±33.24 33.33# (0-100)	19.04 ±28.64 0(0-100)	16.66 (3.19, 30.13)	**0.0125****
Cycle VI (N=83) Control=42 Exp=41	36.50± 31.06 33.33# (0-100)	27.64± 28.77 33.33 (0-100)#	8.86 (-4.22, 21.95)	0.1870
P value Friedman test	**<0.0001****	**<0.0001****		

 * p<0.05   #Wilcoxon Signed Rank test (significant)   ***Significant**

Table 4.12 & Figure 9 show in the control group the mean insomnia scores increased significantly from the baseline score in the 2nd, 3rd, 4th, 5th and the 6th cycles. In the experiment group also scores increased significantly from the baseline in the 2nd, 3rd, 4th and 6th cycles. Significant difference between the experimental and control group was in the fifth cycle (p 0.01). It could be inferred that yoga was helpful in decreasing the insomnia in women who were going through chemotherapy in the experimental group.

Table 4.13 Comparison of Quality of Life (EORTC QLQ C-30) Symptom Scales- Loss of Appetite, within and between Control group and Experimental group of breast cancer patients undergoing chemotherapy

Chemotherapy Cycles & No. of patients in Control and Experimental Groups	Symptom Scale-Loss of appetite			
	Control Group Mean±SD Median (minimum-maximum)	Experimental Group Mean±SD Median (minimum-maximum)	Deference (95% Confi. Internal)	p* Value Mann-Whitney Test
Cycle I (N=100) Control=52 Exp=48	10.25±16.87 0(0-66.66)	9.02±14.96 0(0-33.33)	1.22 (-5.12, 7.58)	0.800
Cycle II (N=98) Control=51 Exp=47	38.56±31.53 33.33# (0-100)	24.11±29.24 0(0-100)#	14.44 (2.22, 26.67)	**0.0157****
Cycle III (N=96) Control=50 Exp=46	44 ±33.29 33.33# (0-100)	36.23±27.05 33.33(0-100)#	7.76 (-4.59, 20.12)	0.2877
Cycle IV (N=93) Control=47 Exp=46	48.22±30.93 33.33# (0-100)	30.43±29.66 33.33(0-100)#	17.79 (5.30, 30.28)	**0.0062****
Cycle V (N=84) Control=42 Exp=42	50±29.67 66.66# (0-100)	32.53±32.50 33.33# (0-100)	17.46 (3.95, 30.97)	**0.0112****
Cycle VI (N=83) Control=42 Exp=41	49.20±30.56 33.33# (0-100)	26.82±30.01 33.33 (0-100)#	22.37 (9.14, 35.61)	**0.0011****
P value Friedman test	**<0.0001****	**<0.0001****		

* p<0.05   ****Significant**   #Wilcoxon Signed Rank test (significant)

Table 4.13 & Figure 10 depict in the control group the mean loss of appetite scores increased significantly from the baseline in the 2nd, 3rd, 4th, 5th and 6th cycles. In the experimental group also mean score increased significantly from the baseline in the 2nd, 3rd, 4th, 5th and 6th cycles. The experimental group exhibited statistically significant differentiation from the control group in the 2nd, 4th, 5th & 6th cycles (p 0.01, p0.006, p 0.01, p0.001) respectively. It could be inferred that yoga was helpful in improving appetite of women who were going through chemotherapy in the experimental group.

Table 4.14 Comparison of Quality of Life (EORTC QLQ C-30) Symptom Scales-Constipation, within and between Control group and Experimental group of breast cancer patients undergoing chemotherapy

Chemotherapy Cycles & No. of patients in Control and Experimental Groups	Symptom Scale Constipation			
	Control Group Mean±SD Median (minimum-maximum)	Experimental Group Mean±SD Median (minimum-maximum)	Deference (95% Confi. Internal)	p* Value Mann-Whitney Test
Cycle I (N=100) Control=52 Exp=48	1.92±7.84 0(0-33.33)	0.69±4.81 0(0-33.33)	1.22 (-1.38, 3.83)	0.3498
Cycle II (N=98) Control=51 Exp=47	23.52±28.51# 0(0-100)	23.40±31.78 0(0-100)#	0.12 (-11.96, 12.21	0.7979
Cycle III (N=96) Control=50 Exp=46	21.33±23.09 33.33# (0-100)	13.04±22.74 0(0-100)#	8.28 (-1.01, 17.59)	**0.0308****
Cycle IV (N=93) Control=47 Exp=46	17.02±24.93# 0 (0-66.66)	13.04±23.80 0(0-100)#	3.97 (-6.06, 14.02)	0.3834
Cycle V (N=84) Control=42 Exp=42	14.28± 19.67# 0 (0-66.66)	10.31± 17.24 0(0-66.66)#	3.96 (-4.06, 11.99)	0.3388
Cycle VI (N=83) Control=42 Exp=41	15.87±25.75# 0 (0-100)	8.13±16.29 0(0-66.66)#	7.74 (-1.69, 17.18)	0.1850
P value Friedman test	**<0.0001****	**<0.0001****		

* p<0.05   **Significant** #Wilcoxon Signed Rank test (significant

Table 4.14 & Figure 11 show that the mean constipation scores of control group increased significantly from the baseline score in the 2nd, 3rd, 4th, 5th and 6th cycles. In the experimental group the mean scores increased significantly in the 2nd, 3rd, 4th, 5th and 6th cycles. Significant difference between experimental and control group was in the third cycle (p 0.03).

Table 4.15 Comparison of Quality of Life (EORTC QLQ C-30) Symptom Scales-Diarrhea, within and between Control group and Experimental group of breast cancer patients undergoing chemotherapy

Chemotherapy Cycles & No. of patients in Control and Experimental Groups	Symptom Scale-Diarrhea			
	Control Group Mean±SD Median (minimum-maximum)	Experimental Group Mean±SD Median (minimum-maximum)	Deference (95% Confi. Internal)	p* Value Mann-Whitney Test
Cycle I (N=100) Control=52 Exp=48	0	0.69±4.81 0(0-33.33)	-0.69 (-2.01, 0 .62)	
Cycle II (N=98) Control=51 Exp=47	0.65±4.66 0(0-33.33)	1.41±9.72 0(0-66.66)	-0.76 (-3.78, 2.25)	0.9421
Cycle III (N=96) Control=50 Exp=46	1.33±6.59 0(0-33.33)	2.17±10.89 0(0-66.66)	-0.84 (-4.45, 2.77)	0.9156
Cycle IV (N=93) Control=47 Exp=46	4.25±14.93 0(0-66.66)	1.44±6.87 0(0-33.33)	2.80 (-2.00, 7.61)	0.3963
Cycle V (N=84) Control=42 Exp=42	2.38±8.68 0(0-33.33)	0 .79±5.14 0(0-33.33)	1.58 (-1.51, 4.68)	0.3084
Cycle VI (N=83) Control=42 Exp=41	3.17±9.90 0(0-33.33)#	2.43±8.78 0(0-33.33)	0.73 (-3.35, 4.82)	0.7192
P value Friedman test	<0.0001**	<0.0001**		

* p<0.05   #Wilcoxon Signed Rank test (significant

Table 4.15 shows that mean score of diarrhea in control group was higher significantly from the baseline score in the sixth cycle. In experimental group the mean scores were similar to the baseline scores. The experimental group exhibited no statistically significant differentiation from the control group in any cycles.

Table 4.16 Comparison of Quality of Life (EORTC QLQ C-30) Financial difficulty, within and between Control group and Experimental group of breast cancer patients undergoing chemotherapy

Chemotherapy Cycles & No. of patients in Control and Experimental Groups	Financial Difficulty			
	Control Group Mean±SD Median (minimum-maximum)	Experimental Group Mean±SD Median (minimum-maximum)	Deference (95% Confi. Internal)	p* value Mann-Whitney test
Cycle I (N=100) Control=52 Exp=48	68.58±34.56 66.66 (0-100)	65.27±38.87 66.66 (0-100)	3.31 (-11.26, 17.88)	0.7497
Cycle II (N=98) Control=51 Exp=47	68.62±34.90 66.66 (0-100)	65.24±39.29 66.66 (0-100)	3.37 (-11.49, 18.25)	0.7419
Cycle III (N=96) Control=50 Exp=46	69.33±34.88 66.66 (0-100)	64.49±39.37 66.66 (0-100)	4.84 (-10.21, 18.89)	0.5927
Cycle IV (N=93) Control=47 Exp=46	67.37±35.09 66.66 (0-100)	64.49±39.37 66.66 (0-100)	2.88 (-12.47, 18.23)	0.8101
Cycle V (N=84) Control=42 Exp=42	66.66±36.81 66.66 (0-100)	63.49±40.19 66.66 (0-100)	3.17 (-13.55, 19.90)	0.7111
Cycle VI (N=83) Control=42 Exp=41	66.66 ±36.81 66.66 (0-100)	62.60 ±40.27 66.66 (0-100)	4.06 (-12.77, 20.90)	0.6294
P value Friedman test	**<0.0001**	**<0.0001**		

* $p < 0.05$

Table 4.16 shows in the control group the scores were similar to the baseline throughout the six cycles. In the experimental group also the scores were similar to the baseline throughout the six cycles. Significant difference in mean scores of both the groups was not observed in any cycle of chemotherapy. It could be interpreted that participants in both the groups had financial difficulties throughout the period of chemotherapy.

Hence on the basis of above results it could be interpreted that differentiations in the mean scores of quality of life i.e. functional and symptoms scales in the experimental group compared to control group was because of yoga practice.

Therefore the researcher rejected the null hypothesis and accepted the alternate hypothesis stating that there would be a significant improvement in the quality of life scores of breast cancer patients undergoing chemotherapy, in the experimental group compared to those in the control group after implementation of yoga.

5. Effectiveness of yoga on Quality Of Life (EORTC BR-23) of breast cancer patients undergoing chemotherapy.

Table 5.1: Comparison of quality of life (EORTC BR23) between Control group and Experimental of breast cancer patients at the baseline (cycle one)

S. No	Domains Of Quality of Life	Control Group (N=52)		Experimental Group (N=48)		p* value
		Mean±SD	Median (minimum-maximum)	Mean±SD	Median (minimum-maximum)	
	Functional scales					
1	Body Image	74.67±6.99	75 (33.33-100)	77.5± 9.87	75 (33.33-100)	0.09
2	Sexual Functioning	0.74±4.96	0 (0-33.33)	0.42±8.09	0 (0-33.33)	0.9419
3	Sexual Enjoyment	-	-	-	-	
4	Future Perspectives	50.64±16.81	66.66 (33.33-66.66)	45.13±16.11	33.33 (33.33-66.66)	0.098
	Symptom scales					
1	Systemic Therapy Side Effects	4.85±5.77	4.76 (0 - 28.57)	3.86±3.20	4.76 (0 - 14.28)	0.771
2	Breast Symptoms	13.78±9.60	8.33 (8.33-50)	14.75±7.13	16.66 (8.33-41.66)	0.085
3	Arm Symptoms	30.55±11.61	33.33 (11.11-66.66)	30.09±14.12	22.22 (11.11-77.77)	0.495
4	Upset by Hair Loss	-	-	-	-	-

*Wilcoxon rank-sum (Mann-Whitney) test, p<0.05

Table 5.1 shows that at baseline the patients in the control and the experimental groups were having similar mean scores with no significant differentiation. Functional Scales –body image, the p value for control and experimental group was (0.09), sexual functioning (0.9419), future perspectives (0.098). Symptom Scales- Systemic Therapy Side Effects, the p value for control and experiment group (0.771), Breast symptoms (0.085), Arm symptoms 0.495). Therefore it could be interpreted that both groups were homogenous with regard to their quality of life scores at the baseline i.e. first cycle of chemotherapy, suggesting that the patients in both groups belonged to same population. Therefore any variation in the results could be interpreted with assurance that it was because of yoga practice.

5.2 Comparison of Quality of Life (EORTC BR 23) Functional and Symptom Scales between control group and the experimental group of breast cancer patients undergoing chemotherapy

Ho$_2$- There would be no significant difference in Quality of Life scores of breast cancer patients undergoing chemotherapy, in the experimental and the control groups after implementation of Yoga.

H$_2$- There would be a significant improvement in the quality of life scores of breast cancer patients undergoing chemotherapy, in the experimental group compared to those in the control group after implementation of yoga, at $p<0.05$ level of significance.

Functional Scales- A higher score represented that quality of life was better and lower score corresponded poor quality of life.

Symptom Scales –- Higher score represented that symptoms were more and quality of life was poor. Lower scores represented that symptoms were less and quality of life was better.

Table5.2: Comparison of Quality of Life (EORTC BR 23) Functional Scales- Body Image, within and between Control group and Experimental group of breast cancer patients undergoing chemotherapy

Chemotherapy Cycles & No. of patients in Control and Experimental Groups	Functional Scales- Body Image			
	Control Group Mean±SD Median (minimum-maximum)	Experimental Group Mean±SD Median (minimum-maximum)	Deference (95% Confi. Internal)	p* Value Mann-Whitney Test
Cycle I (N=100) Control=52 Exp=48	74.67±6.99 75 (58.33-91.66)	77.5±9.87 75(58.33-100)	-4.63 (-8.77, -0.48)	0.09
Cycle II (N=98) Control=51 Exp=47	59.64±18.66 58.33# (33.33-100)	60.46±22.21 66.66# (0-100)	- 0.82 (7.38,-9.02)	0.5092
Cycle III (N=96) Control=50 Exp=46	53.66±18.45 50# (8.33-100)	62.86±20 66.66# (33.33-100)	-9.19 (-1.40,-16.98)	**0.0348**
Cycle IV (N=93) Control=47 Exp=46	53.36±20.38 50# (0-100)	59.42±23.99 54.16# (0-100)	-6.05 (-3.11,-15.21)	0.2544
Cycle V (N=84) Control=42 Exp=42	52.97±22.67 54.16# (0-100)	62.89±23.65 66.66# (8.33-100)	-9.92 (0.13,-19.97)	**0.0388**
Cycle VI (N=83) Control=42 Exp=41	52.18±19.74 50# (0-100)	59.34±20.93 58.33# (25-100)	-7.16 (1.71, -16.05)	0.1563
P value Friedman test	**<0.0001**	**<0.0001**		

*p<0.05   **Significant   #Wilcoxon Signed Rank test (significant)

Table 5.2 &Figure 12 show a significant decrease in mean score in the control group from the baseline score in the 2nd, 3rd, 4th, 5th and 6th cycles. In the experimental group also there was significant decrease in mean scores from the baseline in the second, third, fourth, fifth and sixth cycles. The experimental group exhibited statistically significant differentiation from the control group in the third and fifth cycles (p 0.03, p 0.03). It could be interpreted that yoga was helpful in making improvement in perception of body image in women who were going through chemotherapy in the experimental group.

Table 5.3: Comparison of Quality of Life (EORTC BR 23) Functional Scales-Sexual Functioning, within and between Control group and Experimental group of breast cancer patients undergoing chemotherapy

Chemotherapy Cycles & No. of patients in Control and Experimental Groups	Functional Scales- Sexual Functioning			
	Control Group Mean±SD Median (minimum-maximum)	Experimental Group Mean±SD Median (minimum-maximum)	Deference (95% Confi. Internal)	p* Value Mann-Whitney Test
Cycle I (N=100) Control=52 Exp=48	0.74±4.96 0 (0-33.33)	0.42±8.09 0(0-33.33)	0.31 (-2.56, 3.18	0.9419
Cycle II (N=98) Control=51 Exp=47	0.77±5.08 0(0-33.33)	0.87±5.40 0(0-33.33)	-0.10 (-2.42, 2.21)	0.9299
Cycle III (N=96) Control=50 Exp=46	1.58±7.18 0 (0-33.33)	2.77±9.34 0 (0-33.33)	-1.19 (-4.92, 2.54)	0.5236
Cycle IV (N=93) Control=47 Exp=46	0	2.70±9.22 0 (0-33.33)	-2.70 (-5.86, 0.45)	
Cycle V (N=84) Control=42 Exp=42	1.56±6.50 0 (0-33.33)	2.85±9.46 0 (0-33.33)	-1.29 (-5.29, 2.70)	0.6894
Cycle VI (N=83) Control=42 Exp=41	0	0		
P value Friedman test				

*p<0.05   **Significant

Table 5.3 &Figure 12 reveal **a** greater decrease in mean scores of sexual function in the control and the experimental groups. The experimental group exhibited no statistically significant differentiation from the control group in any cycles.

Table5.4: Comparison of Quality of Life (EORTC BR 23) Functional Scales- Sexual Enjoyment, within and between Control group and Experimental group of breast cancer patients undergoing chemotherapy

Chemotherapy Cycles & No. of patients in Control and Experimental Groups	Functional Scales- Sexual Enjoyment			
	Control Group Mean±SD Median (minimum-maximum)	Experimental Group Mean±SD Median (minimum-maximum)	Deference (95% Confi. Internal)	p* Value Mann-Whitney Test
Cycle I (N=100) Control=52 Exp=48	0	0±33.33 0(-33.33- 33.33)	0 (-34.39, 34.39)	1.000
Cycle II (N=98) Control=51 Exp=47	11.11±19.24 0(0-33.33)	11.11±19.24 0(0-33.33)	0 (-43.62, 43.62)	1.000
Cycle III (N=96) Control=50 Exp=46	0	8.33±16.66 0(0-33.33)	-8.33 (-25.64, 8.97)	0.263
Cycle IV (N=93) Control=47 Exp=46	0	16.66±19.24 16.66(0-33.33)	-16.66 (-36.65, 3.31)	0.09
Cycle V (N=84) Control=42 Exp=42	0	8.33±16.66 0(0-33.33)	-8.33 (-23.52, 6.85)	0.22
Cycle VI (N=83) Control=42 Exp=41	0	0		
P value Friedman test				

*p<0.05   **Significant   #Wilcoxon Signed Rank test (significant)

Table 5.4 reveals a greater decrease in mean of sexual enjoyment in control and experimental groups. The experimental group exhibited no statistically significant differentiation from the control group in any cycles.

Table5.5: Comparison of Quality of Life (EORTC BR 23) Functional Scales- Future Perspectives, within and between Control group and Experimental group of breast cancer patients undergoing chemotherapy

Chemotherapy Cycles & No. of patients in Control and Experimental Groups	Functional Scales- Future Perspectives			
	Control Group Mean±SD Median (minimum-maximum)	Experimental Group Mean±SD Median (minimum-maximum)	Deference (95% Confi. Internal)	p* Value Mann-Whitney Test
Cycle I (N=100) Control=52 Exp=48	50.64±16.81 66.66 (33.33-66.66)	45.13± 16.11 33.33 (33.33-66.66)	5.50 (-1.04, 12.04)	0.098
Cycle II (N=98) Control=51 Exp=47	35.94±27.36 33.33 (0-100)	48.93±30.17 33.33# (0-100)	-12.98 (-24.52, -1.45)	**0.0375****
Cycle III (N=96) Control=50 Exp=46	38±29.36 33.33 (0-100)	57.97±28.48 66.66# (0-100)	-19.97 (-31.71,-8.22)	**0.0014****
Cycle IV (N=93) Control=47 Exp=46	40.42±32.55 33.33 (0-100)	58.69±27.38 66.66# (0-100)	-18.27 (-30.67, -5.86)	**0.0030****
Cycle V (N=84) Control=42 Exp=42	40.47±29.93 33.33 (0-100)	63.49±29.27 66.66# (0-100)	-23.01 (-35.86, -10.16)	**0.0006****
Cycle VI (N=83) Control=42 Exp=41	35.71±26.94 33.33 (0-100)	62.60±28.08 66.66# (0-100)	-26.88 (-38.90, -14.86)	**0.0000****
P value Friedman test	**<0.0001**	**<0.0001**		

*p<0.05   **Significant   #Wilcoxon Signed Rank test (significant)

Table 5.5 & Figure 13 show in the control group mean scores decreased from the baseline in all through six cycles. It was not statistically significant. In the experimental group mean scores increased significantly from the baseline score in the 2nd, 3rd, 4th, 5th and 6th cycles. The experiment group exhibited a considerable difference from the control group in 2nd, 3rd, 4th, 5th and 6th cycles (p 0.03, p0.001, p0.03, p0.00, p0.000,p 0.000). It could be interpreted that yoga was helpful in improving the future perspectives of women who were going through chemotherapy in the experimental group.

Table5.6: Comparison of Quality of Life (EORTC BR 23) Symptom scales- Systemic therapy side effects, within and between Control group and Experimental group of breast cancer patients undergoing chemotherapy

Chemotherapy Cycles & No. of patients in Control and Experimental Groups	Symptom scales- Systemic therapy side effects			
	Control Group Mean±SD Median (minimum-maximum)	Experimental Group Mean±SD Median (minimum-maximum)	Deference (95% Confi. Internal)	p* Value Mann-Whitney Test
Cycle I (N=100) Control=52 Exp=48	4.85±5.77 4.76 (0 -28.57)	3.86±3.20 4.76 (0 -14.28)	0.98 (-.89, 2.85)	0.7712
Cycle II (N=98) Control=51 Exp=47	40.33±15.18 38.09# (14.28-76.19	37.18±16.54 33.33# (14.28-90.47)	3.15 (-3.21, 9.51)	0.2059
Cycle III (N=96) Control=50 Exp=46	43.23±16.49 42.85# (4.76-90.47)	38.61±14.38 38.09# (4.76-71.42)	4.62 (-1.66, 10.91)	0.0689
Cycle IV (N=93) Control=47 Exp=46	43.97±19.58 42.85# (0-95.23)	33.02±16.75 28.57# (9.52-100)	10.94 (3.43,18.46)	**0.0008****
Cycle V (N=84) Control=42 Exp=42	34.69± 13.10 33.33# (9.52-61.90)	30.27±17.49 30.95# (4.76-71.42	4.42 (-2.28, 11.13)	0.1748
Cycle VI (N=83) Control=42 Exp=41	36.62±14.81 38.09# (9.52-71.42)	28.80±16.45 28.57# (4.76- 66.66)	7.81 (0.98,14.65)	**0.0225****
P value Friedman test	**<0.0001**	**<0.0001**		

*p<0.05   **Significant   #Wilcoxon Signed Rank test (significant

Table 5.6 & Figure 14 reveal mean scores in the control group increased significantly from the baseline score in 2nd, 3rd, 4th, 5th and 6th cycles. In the experimental group the scores also increased significantly from the baseline in the 2nd, 3rd, 4th, 5th and 6th cycles. Significant difference amongst experimental group & control group was observed in the 4th and 6th cycles (p 0.008& p0.02). It could be interpreted that yoga was effective in reducing the systemic therapy side effects in patients going through chemotherapy in the experiment group.

Table 5.7: Comparison of Quality of Life (EORTC BR 23) Symptom Scales- Breast symptoms, within and between Control group and Experimental group of breast cancer patients undergoing chemotherapy

Chemotherapy Cycles & No. of patients in Control and Experimental Groups	Symptom scales- Breast symptoms			
	Control Group Mean±SD Median (minimum-maximum)	Experimental Group Mean±SD Median (minimum-maximum)	Deference (95% Confi. Internal)	p* Value Mann-Whitney Test
Cycle I (N=100) Control=52 Exp=48	13.78±9.60 8.33 (8.33-50)	14.75±7.13 16.66 (8.33-41.66)	-0.97 (-4.35, 2.40)	0.0855
Cycle II (N=98) Control=51 Exp=47	10.78±11.58 8.33# (0-50)	7.44±9.55 8.33(0-41.66)#	3.33 (-0.94, 7.61)	0.0927
Cycle III (N=96) Control=50 Exp=46	14.33±15.88 8.33 (0-50)	5.07±7.75 0(0-33.33)#	9.26 (4.12,14.39)	**0.0001****
Cycle IV (N=93) Control=47 Exp=46	10.28±12.67 8.33 (0-50)	7.42±13.29 0(0-75)#	2.85 (-2.49, 8.20)	0.0733
Cycle V (N=84) Control=42 Exp=42	6.94±6.35 8.33# (0-25)	5.75±9.47 0(0-50)#	1.19 (-2.31, 4.69)	0.0931
Cycle VI (N=83) Control=42 Exp=41	8.33±13.39 8.33# (0-66.66)	3.04±5.51 0(0-25)#	5.28 (0.78, 9.77)	**0.0146****
P value Friedman test	**<0.0001**	**<0.0001**		

*p<0.05   **Significant   #Wilcoxon Signed Rank test (significant)

Table 5.7& Figure 15 show in the control group breast symptoms mean scores decreased significantly from the baseline in 2nd, 5th and the 6th cycles. It was not statistically significant. However in the experimental group the scores decreased significantly from the baseline in the 2nd, 3rd, 4th, 5th and 6th cycles. Significant difference between experimental group and control group was observed during 3rd and 6th cycles (p 0.0001, p 0.01). It could be interpreted that yoga was helpful in decreasing breast symptoms in women who were going through chemotherapy in the experimental group.

Table5.8: Comparison of Quality of Life (EORTC BR 23) Symptom Scales- Arm Symptoms, within and between Control group and Experimental group of breast cancer patients undergoing chemotherapy

Chemotherapy Cycles & No. of patients in Control and Experimental Groups	Symptom scales- Arm Symptoms			
	Control Group Mean±SD Median (minimum-maximum)	Experimental Group Mean±SD Median (minimum-maximum)	Deference (95% Confi. Internal)	p* Value Mann-Whitney Test
Cycle I (N=100) Control=52 Exp=48	30.55±11.61 33.33 (11.11-66.66)	30.09±14.12 22.22 (0-77.77)	0.46 (-4.65, 5.57)	0.4950
Cycle II (N=98) Control=51 Exp=47	33.76±20.60 33.33 (0-88.88)	29.07±20.40 33.33 (0-100)	4.69 (-3.53,12.92)	0.1174
Cycle III (N=96) Control=50 Exp=46	24.44±17.53 22.22# (0-88.88)	15.45±10.60 11.11# (0-44.44)	8.98 (3.05, 14.91)	**0.0033**
Cycle IV (N=93) Control=47 Exp=46	18.91±13.29 22.22# (0-55.55)	18.35±17.40 11.11# (0-77.77)	0.55 (-5.81, 6.92)	0.4639
Cycle V (N=84) Control=42 Exp=42	16.93±14.35 22.22# (0-55.55)	15.07±15.87 11.11# (0-77.77)	1.85 (-4.71, 8.42)	0.3632
Cycle VI (N=83) Control=42 Exp=41	19.04±17.74 22.22# (0-100)	10.84±13.49 11.11# (0-55.55)	8.20 (1.31, 15.10)	**0.0114**
P value Friedman test	**<0.0001**	**<0.0001**		

*p<0.05   **Significant   #Wilcoxon Signed Rank test (significant

Table5.8 & Figure 16 show in the control group the mean arm symptoms decreased significantly from the baseline in the 3rd, 4th, 5th and 6th cycles. In the experimental group also significant decrease in scores occurred from the baseline score in the 3rd, 4th, 5th and 6th cycles. Significant dissimilarity amid experimental and control groups was observed in the third & sixth cycles (p 0.003, p 0.01). It could be interpreted that yoga was helpful in decreasing the symptoms of arm in women who were receiving chemotherapeutic drugs in the experimental group.

Table5.9: Comparison of Quality of Life (EORTC BR 23) scores of Symptom Scales-Upset by hair loss, within and between Control group and Experimental group of breast cancer patients undergoing chemotherapy

Chemotherapy Cycles & No. of patients in Control and Experimental Groups	Symptom scales- Upset by Hair Loss			
	Control Group Mean±SD Median (minimum-maximum)	Experimental Group Mean±SD Median (minimum-maximum)	Deference (95% Confi. Internal)	p* Value Mann-Whitney Test
Cycle I (N=100) Control=52 Exp=48	0	0		
Cycle II (N=98) Control=51 Exp=47	77.56±30.04 100 (0-100)	80.14±29.20 100(0-100)	-2.57 (-14.42, 9.26)	0.5648
Cycle III (N=96) Control=50 Exp=46	76.66±28.76 100 (0-100)	68.84±32.50 66.66# (0-100)	7.82 (-4.59, 20.24)	0.2312
Cycle IV (N=93) Control=47 Exp=46	70.92±29.98 66.66 (0-100)	63.76±33.57 66.66# (0-100)	7.15 (-5.95, 20.26)	0.3323
Cycle V (N=84) Control=42 Exp=42	64.28±34.05 66.66# (0-100)	55.55±35.81 66.66# (0-100)	8.73 (-6.43, 23.89)	0.2680
Cycle VI (N=83) Control=42 Exp=41	73.01±31.44 83.33 (0-100)	56.09±36.08 66.66# (0-100)	16.91 (2.14, 31.68)	**0.0288****
P value Friedman test	**<0.0001**	**<0.0001**		

*p<0.05   **Significant   #Wilcoxon Signed Rank test (significant)

Table5.9 & Figure 17 depict in the control group mean scores increased significantly from the baseline (second cycle) in the 3rd, 4th, 5th and 6th cycles. In the experimental group also the scores increased from the baseline score in the 3rd, 4th, 5th and 6th cycles. The experiment group exhibited a considerable dissimilarity from the control group in the sixth cycle only (p 0.02). It could be interpreted that yoga was effective in reducing the emotional disturbance caused by hair loss in breast cancer patients who were going through chemotherapy in the experimental group.

Hence on the basis of results it could be inferred that improvement in quality of life i.e. the functional & symptom scales in the experiment group compared to the control group was because of yoga intervention.

Therefore researcher rejected the null hypothesis and accepted the alternate hypothesis stating that there would be a significant improvement in the quality of life scores of breast cancer patients going through chemotherapy, in the experimental group compared to those in the control group after implementation of Yoga.

Summary: This chapter included analysis on Sociodemographic and clinical variables, effectiveness of yoga on Anxiety, Depression and Stress level, quality of life (EORTC QLQ C30 , BR 23) of breast cancer patients undergoing chemotherapy.