Base-line characteristics of the study participants

Among the participants 71.9% intervention and 63.2% of the control groups of the study participants were orthodox Christians. Also 46.9% of the intervention and 46.8% of the control groups attained secondary school. Among the total 114 study participants 27(47.4%) of the intervention and 37(64.9%) of the control groups were married. Significance difference was observed between the intervention and control groups in the communication that they have with their physician. (**Table 3**)

Table 1: Socio-demographic, Economic and Communication related condition of patients of both group at TASH oncology unit Addis Ababa, Ethiopia 2019

Background Characteristics	Intervention Groups(IPT) N=57 N (%)	Control groups (TAU) N=57 N (%)	P-value
Age			
19-28	5(8.7%)	6(10.5%)	
29-38	19(33.3%)	18(31.5%)	
39-48	24(42%)	22(38.6%)	0.970
49-58	5(8.7%)	7(12.3%)	
>58	4(7.01%)	4(7.01%)	
Mean±SD			
Wealth Quintiles			
Lowest	17(29.8%)	23(40.3%)	
Second	6(10.5%)	2(3.5%)	
Middle	9(15.7%)	12(21.05%)	0.400
Fourth	20(35.08)	15(26.31%)	
Highest	5(8.7%)	5(8.7%)	
Religion			
Orthodox	41(71.9%)	36(63.2%)	0.397
Catholic	0(0)	2(3.5%)	

Protestant	10(17.5%)	11(19.3%)	
Muslim	5(8.75)	8(14%)	
Other	1(1.7%)	0(0)	
Educational status			
No Formal Education	9(15.7%)	13(22.8%)	
Primary School	13(26.5%)	10(21.3%)	
Secondary School	23(46.9%)	22(46.8%)	0.07
Technical school and above	12(24.5%)	12(25.5%)	
Marital status			
Single	30(52.6%)	20(35.1%)	
Married	27(47.3%)	37(64.9%)	0.06
Communication with Physician			
Good Communication	28(49.1%)	8(14%)	0.000
Poor Communication	29(50.8%)	49(85.9%)	
Communication with Family			
Good Communication	43(75.4%)	40(70.2%)	0.528
Poor Communication	14(24.6%)	17(29.8%)	

Base-line clinical Characteristics of Breast Cancer patients at TASH Oncology Unit

No significant difference was observed among the clinical characteristics of the patients except that of the treatment kind that the patients were on. Significant difference was observed on kind of the treatment that the patient is on between the intervention and control groups. 29(50.8%) of the Intervention and 48(84.2%) of the control groups are on chemotherapy and had mastectomy. (**Table 4**)

Table 2: Clinical Characteristics of Breast Cancer patients of both groups at TASH Addis Ababa, Ethiopia 2019

Clinical Characteristics	Intervention Groups(IPT) N=57 N (%)	Control groups (TAU) N=57 N (%)	P-value
Tumor size			
<2cm	9(15.7%)	6(10.5%)	
2cm-5cm	30(52.6%)	31(54.3%)	0.32
>5cm	18(31.5%)	20(35.08%)	
Stage of the cancer			
Stage 1	5(8.7%)	1(1.75%)	
Stage 2	14(24.1%)	15(26.3%)	0.36
Stage 3	20(35.08%)	22(38.59)	
Stage 4	18(31.5%)	19(33.3)	
Metastasis at diagnosis			
Metastasis present	18(31.5%)	19(33.3%)	0.743
Metastasis absent	39(68.3%)	38(22.8%)	
Kind of treatment			
Chemotherapy	3(5.2%)	7(12.2%)	
Radiotherapy	1(1.7%)	0(0)	
Chemotherapy and Radiotherapy	0(0)	1(1.7%)	
Chemotherapy and surgery	29(50.8%)	48(84.2%)	0.000

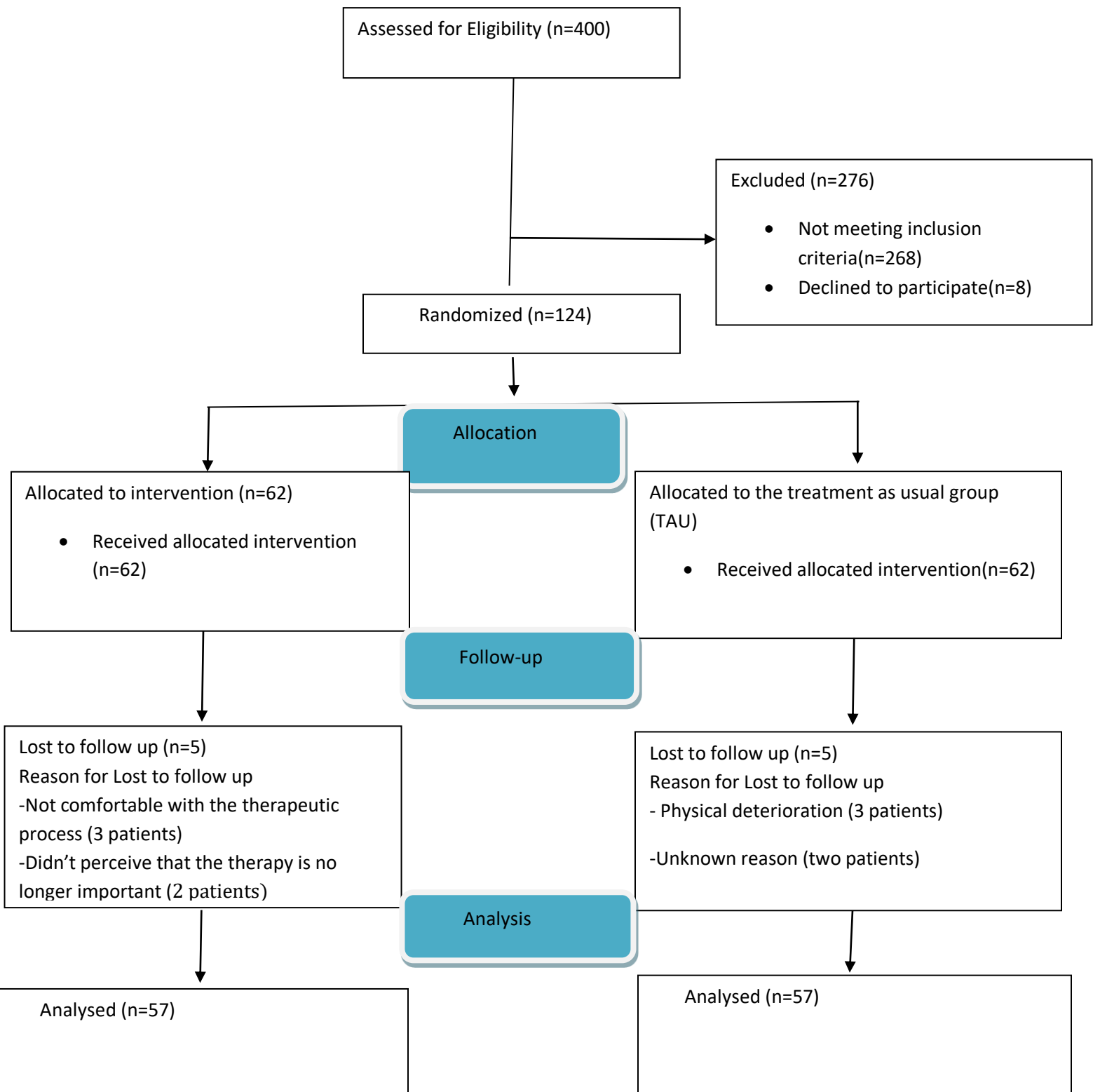|			
Chemotherapy, Radiotherapy and surgery	12(21.1%)	0(0)	
Radiotherapy and surgery	1(1.7%)	0(0)	
Hormonal therapy	11(19.3%)	1(1.7%)	
Other disease condition			
Present	12(21%)	6(10.5%)	0.123
Absent	45(79%)	51(89.4%)	

Figure 1:-CONSORT flowchart for the study "The Effect of Inter-Personal Psychotherapy on quality of life among Breast Cancer Patients with Common Mental Disorder: A Randomized Control Trial at Tikur Anbessa Specialized Hospital Oncology unit 2019.

Outcome variable

Anxiety and depression

Inter-personal Psychotherapy was associated with post-intervention anxiety score [$p<0.01$, coefficient -3.68 and 95%CI (-5.67,-1.69)]. Participants base-line anxiety score was also associated with post-intervention anxiety score [$p<0.01$, coefficient 0.607, and 95%CI (0.35, 0.86)]. Being in the highest quintile was inversely associated with post-intervention anxiety score [$p=0.001$, 95%CI (-8.39,-2.16)]. On the other hand, patients being on radiotherapy and having mastectomy found to increase anxiety [$p=0.025$, 95%CI (1.34, 19.84)].

Inter-personal Psychotherapy was also associated with post-intervention depression score, even if the base-line depression level of the intervention group was higher than that of the control groups [$p<0.01$, coefficient -3.22 and 95%CI (-4.71, -1.68)].Participants base-line depression level was also found to be associated with post-intervention depression score [$p<0.01$, coefficient 0.546 and 95%CI (0.329, 0.763)].

Table 2: ANCOVA result of the effect of IPT-E on common mental among breast cancer patients at TASH oncology unit Addis Ababa, Ethiopia 2019

Symptoms	Exposure status	Baseline Mean (SD)	Outcome Mean (SD)	Coefficient	95% CI	t value	P value
Anxiety	Intervention	12.49(3.88)	8.21(4.64)	-3.68	(-5.67,-1.69)	-3.67	<0.001
	Control	12.23(2.73)	11.98(4.62)	-	-	-	-
Depression	Intervention	13.87(3.48)	9.7(4.1)	-3.22	(-4.7,-1.69)	-4.16	<0.001
	Control	11.75(3.45)	12.23(4.48)	-	-	-	-

Quality of life of the patients

The result showed that inter-personal psychotherapy had an effect in improving quality of life domains such as; Physical functioning from the functional scale. Among the symptom scales; the result revealed a significant decrease in insomnia and fatigue whereas an improvement in general health status. Further, individual domain ANCOVA analysis showed significant difference between intervention and control groups after the intervention in terms of certain quality of life domains.

Psychotherapy was found to be associated with an increased physical functioning in the intervention group [p=0.006, coefficient 10.55 and 95%CI (3.13, 17.98)] compared to control group and participant's age was found to affect the post-intervention physical functioning with [p=0.02 and 95%CI (-0.796, -0.071)]. Base-line depression was found to be associated with post-intervention physical functioning with [p=0.02 and 95%CI (-2.45, -0.216)].

Psychotherapy and post-intervention fatigue were associated in a way that due to IPT, there was a decrease in fatigue score. Breast cancer stage also found to significantly affect outcome fatigue; which was the patient's being stage IV highly increased the post-intervention fatigue score [p=0.015 and 95%CI (5.7, 51.21)].

The result in this study showed the effect that psychotherapy had on insomnia score with [p=0.02 and 95%CI (-31.87, -7.25)]. Being in the highest quintile was also found to negatively affect outcome insomnia with (p=0.04).

Among the functional scales, our experiment confirmed that role, cognitive, emotional and social functioning was not found to be affected by the intervention. Whereas among the symptom scales our experiments confirmed that dyspnoea, pain, appetite loss, nausea and vomiting, constipation, diarrhoea and financial difficulties were not found to be affected by the intervention.

Patients' health related quality of life in the intervention group significantly improved after psychotherapy than that of the control group (p<0.001) with the patients being in the highest quintile positively associated whereas the patients being on radiotherapy be negatively associated. Being in the highest quintile positively associated with health related quality of life

[p=0.05 and 95%CI (0.02, 24.59)]. Here radio-therapy was found to be negatively associated with post-intervention health related quality of life (p=0.013).

Table 3: ACOVA result of the effect of Psychotherapy on treatment outcome among breast cancer patients with CMD; all domains of quality of life result

Scales	Quality of life Domains	Exposure status	Baseline Mean (SD)	Outcome Mean (SD)	Coefficient	95% CI	t value	P value
Functional Scales	Physical functioning	Intervention	66.08(20.33)	73.57(22.00)	10.55	(3.13, 17.98)	2.82	0.006*
		Control	59.30(26.75)	62.81(25.54)	-			
	Role functioning	Intervention	57.60(32.59)	62.87(34.36)	8.89	(-2.07, 19.85)	1.61	0.111
		Control	59.94(39.07)	58.48(33.20)	-			
	Cognitive Functioning	Intervention	60.23(29.17)	61.40(29.57)	8.05	(-1.36, 17.45)	1.7	0.093
		Control	76.90(23.31)	66.96(2.16)	-			
	Emotional Functioning	Intervention	39.62(23.43)	46.35(27.28)	6.54	(-2.75, 15.82)	1.40	0.166
		Control	55.70(26.92)	48.68(29.20)	-			
	Social Functioning	Intervention	50.29(35.28)	55.56(35.96)	7.09	(-2.68, 16.86)	1.44	0.153
		Control	64.04(36.57)	51.56(35.96)	-			
	Dyspnoea	Intervention	26.32(27.99)	19.88(28.07)	-6.10	(-15.43, 3.22)	-1.30	0.197

		Control	23.39(29.52)	24.56(29.23)	-			
	Pain	Intervention	44.44(30.43)	43.57(32.70)	-0.83	(-10.77, 9.10)	-0.17	0.868
		Control	40.35(31.96)	45.32(31.30)	-			
Symptom Scales	Fatigue	Intervention	45.42(28.81)	30.99(29.90)	-11.37	(-21.49, -1.24)	-2.23	0.028*
		Control	48.54(29.22)	44.25(30.32)	-			
	Insomnia	Intervention	44.44(36.37)	21.05(27.91)	-19.56	(-31.87, -7.25)	-3.15	0.002*
		Control	28.07(31.36)	35.09(36.42)	-			
	Appetite Loss	Intervention	46.20(34.93)	41.52(37.42)	-3.11	(-14.88, 8.67)	-0.52	0.602
		Control	47.95(39.35)	49.71(36.25)	-			
	Nausea/Vomiting	Intervention	19.59(25.02)	19.59(25.42)	-6.63	(-16.66, 3.39)	-1.31	0.192
		Control	26.61(31.94)	33.04(32.81)	-			
	Constipation	Intervention	29.24(32.78)	31.58(36.96)	-5.36	(-15.08, 4.37)	-1.09	0.277
		Control	29.82(34.89)	38.01(36.43)	-			

	Diarrhoea	Intervention	5.85(17.95)	4.09(14.18)	-8.42	(-17.42, 0.58)	-1.86	0.07
		Control	4.09(14.18)	15.79(24.48)	-			
	Financial difficulties	Intervention	67.84(35.62)	64.33(36.66)	-3.02	(-12.33, 6.29)	-0.64	0.522
		Control	60.23(41.99)	61.99(37.50)	-			
General Health Status	Health related quality of life/General health status	Intervention	46.93(15.64)	65.79(17.51)	21.85	(14.10, 29.59)	5.60	0.000**
		Control	50.29(17.25)	44.30(16.90)				