

Table 1. Observational studies reporting body composition in females treated for breast cancer (n=15)

	Sample (size, key characteristics)	Study design/purpose	Imaging Technique/ timing	Outcomes			Reference
				Body weight	Adipose tissue	Lean body mass	
Ali <i>et al.</i> , 1998	N=57 Age, race, disease stage, menopausal status not reported	Cross-sectional; to measure BMD and BComp in females treated with tamoxifen	DXA (during CT)	Not reported	%BF higher in tamoxifen group vs. healthy controls (p<0.05)	No differences in LBM	17
Campbell <i>et al.</i> , 2007	N=10 46.9 ± 2.16 yo Race not reported Stage I-III A Recruited before CT Mixed menopausal status	Observational; to determine the magnitude and pattern of weight gain and BComp changes over the course of CT	DXA (before and immediately following CT)	70% reported ↑ in weight; trend toward weight gain from pre- to post-treatment (p=0.09)	↑ in %BF from baseline to end of treatment	No changes in LBM	19
Cheney <i>et al.</i> 1997	N=8 58.0 yo (range: 46-66) Race not reported Stage I-III A Recruited during CT Mixed menopausal status	Observational; to describe the changes in fat distribution associated with BC treatment	CAT (during CT and 6 mos. later)	63% report weight ↑ since diagnosis; mean weight gain was 3.3 kg	↑ in subcutaneous fat and visceral fat over time	↓ in LBM over time	9

Demark-Wahnefried <i>et al.</i> 1997	N=18 39.9 ± 4.4 yo 94% White Stage I/II Recruited post-surgery, pre adjuvant CT Premenopausal only	Observational; to explore potential reasons for weight gain during CT	DXA (before and after CT)	No weight gain noted during CT; mean weight gain of 3.8 ± 0.75 kg between CT completion and 1 yr (p=0.0002)	No changes in %BF	Trend toward ↓ in LBM (p=.10);	10
Demark-Wahnefried <i>et al.</i> 2001	N=53 41.5 ± 5.5 yo 85% White Stage 0-III Recruited post-surgery, pre adjuvant CT or localized treatment Premenopausal only	Observational; to assess changes in dietary intake, REE, PA and body composition that occur thru year 1 of diagnosis in CT (n=38) vs. LT (n=22) recipients	DXA (baseline, 6 and 12 mos.)	Linear trends in weight gain from baseline to 6 mo and then 12 mo year (p=0.17, adjusted)	↑ in FM and %BF (p=0.04, adjusted) for CT patients	Trend toward ↓ in LBM in CT patients (p=0.30, adjusted)	11
Freedman <i>et al.</i> 2004	N=71 47.2 ± 9.0 yo 76% White Stage I-III Recruited post-surgery, pre-CT Mixed menopausal status	Observational; to evaluate changes in body composition before, at the completion of and 6 months after CT.	DXA & CAT (before CT, after CT completion, 6 mos. post CT; n=17 to assess SAT and VAT via CAT)	Trend toward weight loss from baseline thru CT completion in women with breast cancer vs. controls (p=0.15).	No change in %BF from baseline to CT completion; significant ↑ in %BF from CT completion to 6 mos. follow-up. (p=0.02) ↓ in VAT:SAT (p=0.02)	Not reported	20
Gordon <i>et al.</i>	N=43	Observational;	DXA	79% of	%BF and FM ↑	53% (n=23) had	21

2011	41 yo (median) Race not specified Stage I-II Recruited 4 weeks before CT Premenopausal only	to characterize the regional body composition changes in women treated with adjuvant CT.	(before CT and 12 mos.)	participants weight ↑ from baseline to 12 mo (p=0.0002); median ↑ was 2.7 kg	significantly by 2.7% and 3.2 kg (p=0.0001), respectively, from baseline to 12 mos.; % leg fat and % trunk fat ↑ by 7.1% and 3.0 %, respectively, from baseline to 12 mos. (p<0.0001 for both)	trend ↓ LBM overall (p=0.4); more pronounced in the trunk region in women with CT induced ovarian failure	
Irwin <i>et al.</i> 2005	N=132 56.3 ± 10.5 yo 85% white Stage 0-IIIa Recruited post diagnosis Mixed menopausal status	Observational; to investigate body composition changes and associated lifestyle factors in the post-diagnosis period	DXA (within 1 year of diagnosis and 2 years later)	68% ↑ weight; mean ↑ was 1.7 ± 4.7 kg	74% ↑ BF;; mean %BF ↑ was 2.1 ± 3.9%	Not reported	22
Kutynec <i>et al.</i> 1999	N=18 43.0 ± 5.5 yo 88% white Stage I/II Recruited pre-treatment Mixed menopausal status	Observational; to compare weight and body composition and determinants of energy balance in women treated with CT vs. RT from baseline to completion	DXA (before CT or RT and at completion of treatment, ~12 weeks)	No significant changes in weight from baseline to 12 weeks.	%BF ↑ significantly in both groups from baseline (p=0.4)	LBM ↓ significantly in both groups from baseline (p=0.02); ↓ were significantly greater in the CT vs. RT group (p=0.02)	23
McTiernan <i>et</i>	N=505	Cross-sectional;	DXA	Not reported	Mean %BF was	Not reported	14

<i>al.</i> 2003	62.2 ± 8.0 yo 82% White Stage 0-IIIa Recruited post-treatment Postmenopausal only	to test the associations between body composition and sex hormones concentrations	(baseline only)	based on study design	38.3%		
Nguyen <i>et al.</i> 2001	N=71 58.0 ± 2.1 yo Race not specified Stage not specified Recruited during tamoxifen therapy, Post-menopausal only	Cross-sectional; to investigate whether tamoxifen use is associated with visceral adipose tissue (VAT) accumulation and fatty liver	CAT	Not reported	Tamoxifen recipients had significantly higher levels of VAT and fat accumulation in the liver vs. controls (p=0.01)	Not investigated	18
Nissen <i>et al.</i> 2011	N=49 46.8 ± 0.5 yo 94% White Stage I-III Recruited within 1 mo of adjuvant CT Mixed menopausal status	Observational; to identify predictors of weight and body composition among women receiving CT	DXA (before CT and at 12 mos.)	Women of normal BW ↑4.3 lbs (p=0.0002); No significant weight changes in overweight and obese women.	Women of normal weight at baseline experience ↑ FM in the torso (p=0.006) and arms (p=0.008); no changes in FM for overweight or obese women.	Women who were overweight and obese experienced ↓ LBM in arms verses normal weight women (p=0.018)	24
Prado <i>et al.</i> 2009	N=55 54.8 ± 10.4 yo Race and	Cross-sectional; to investigate the associations of	CAT (One time ± 30 days of cycle)	Not reported	Not reported	25.5% (n=14) prevalence of sarcopenia which	46

	menopause status not specified Stage IV Recruited during treatment	body composition and CT toxicity and time to tumor progression	1.)			was associated with toxicity and shorter time to tumor progression	
Thomson <i>et al.</i> 2009	N=52 55.9 ± 9.4 yo 81% White Stage 0-III A Recruited post treatment Menopause status not reported	Cross-sectional; to assess the prevalence of metabolic syndrome in overweight women	DXA	Majority self-reported ↑ of 9.3 kg in the past 5 years	Mean % BF 46.9% ± 5.4, a propensity for central adiposity	LBM only reported as mass (40.7 kg ± 4.2)	15
Winters-Stone <i>et al.</i> 2009	N=61 44.0 ± 5.2 yo Race not specified Stage I-III A Recruited post CT Post-menopausal	Observational; to describe risk factors for fracture among women with CT induced amenorrhea (N=35 breast CA survivors; n=26 controls)	DXA (1 year after CT and 12 mos. later)	Not reported	Significantly ↑ %BF and FM at baseline and 12 mos. for breast CA survivors vs. controls (p<0.05)	No difference in LBM between groups at any point.	25

Abbreviations legend: BC= breast cancer; BComp= body composition; BF= body fat; BMD= bone mineral density; CA= cancer; CAT=computed axial tomography, CT= chemotherapy, DXA=dual energy x-ray absorptiometry, FM=fat mass, LT=localized treatment, PA=physical activity, REE=resting energy expenditure, SAT= subcutaneous adipose tissue, VAT= visceral adipose tissue