**Pre-treatment predictors of post-treatment fatigue at 2 years**

**Sample size**

In the original dataset, there were 270 patients. Out of the 270 patients, 206 patients had cancer treatment of chemotherapy and/or radiation. Out of the 206 patients, 194 patients had valid input of the outcome variable post-treatment SF-36 Vitality Score.

**Descriptive Statistics**

* Categorical Predictors in Number (%)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sample Characteristics** | **Overall (N = 194)**  **(Column %)** | **Fatigue (N = 86)**  **(Row %)** | **Not Fatigue (N = 108)**  **(Row %)** | **Bivariate p-value** |
| ***SF-vitality score (Baseline)*** |  |  |  | 5.49e-09\*\* |
| Fatigue (<=45) | 63 (32.5%) | 48 (76.2%) | 15 (23.8%) |  |
| Not fatigue (>45) | 131 (67.5%) | 38 (29.0%) | 93 (71.0%) |  |
| ***Race*** |  |  |  | 0.75 |
| White | 133 (68.6%) | 60 (45.1%) | 73 (54.9%) |  |
| Non-White | 61 (31.4%) | 26 (42.6%) | 35 (57.4%) |  |
| ***Education*** |  |  |  | 0.40 |
| At most a high school degree | 54 (27.8%) | 27 (50.0%) | 27 (50.0%) |  |
| College graduate | 79 (40.7%) | 36 (45.6%) | 43 (54.4%) |  |
| Post-graduate degree | 61 (31.4%) | 23 (37.7%) | 38 (62.3%) |  |
| ***Employment*** |  |  |  | 0.02\* |
| Yes | 122 (62.9%) | 46 (37.7%) | 76 (62.3%) |  |
| No | 72 (37.1%) | 40 (55.6%) | 32 (44.4%) |  |
| ***Married*** |  |  |  | 0.97 |
| Yes | 126 (64.9%) | 56 (44.4%) | 70 (55.6%) |  |
| No | 68 (35.1%) | 30 (44.1%) | 38 (55.9%) |  |
| ***Surgery Type*** |  |  |  | 0.92 |
| Neochemo | 22 (11.3%) | 9 (41.0%) | 13 (59.0%) |  |
| Lumpectomy | 142 (73.2%) | 63 (44.4%) | 79 (54.6%) |  |
| Mastectomy | 30 (15.5%) | 14 (46.7%) | 16 (53.3%) |  |
| ***Cancer treatment received*** |  |  |  | 0.36 |
| Chemo only | 19 (9.8%) | 9 (47.4%) | 10 (52.6%) |  |
| Radiation only | 108 (55.7%) | 52 (48.1%) | 56 (51.9%) |  |
| Chemo + radiation | 67 (34.5%) | 25 (37.3%) | 42 (62.7%) |  |
| ***CTQ: Childhood trauma*** |  |  |  | 0.08 |
| No childhood maltreatment | 126 (64.9%) | 50 (39.7%) | 76 (60.3%) |  |
| Any maltreatment | 68 (35.1%) | 36 (52.9%) | 32 (47.1%) |  |
| ***Attachment - baseline (SPS)*** |  |  |  | 0.0023\*\* |
| <16 | 59 (30.4%) | 36 (61.0%) | 23 (39.0%) |  |
| 16 | 135 (60.6%) | 50 (37.0%) | 85 (63.0%) |  |
| ***Prior history of depression*** |  |  |  | 0.02\* |
| Yes | 39 (20.1%) | 24 (61.5%) | 15 (38.5%) |  |
| No | 152 (78.4%) | 62 (40.8%) | 90 (59.2%) |  |
| Missing | 3 (1.5%) | 0 (0.0%) | 3 (100.0%) |  |
| ***SNPs – TNF high alleles*** |  |  |  | 0.06 |
| 2 | 110 (56.7%) | 43 (39.1%) | 67 (60.9%) |  |
| 0/1 | 31 (16.0%) | 18 (58.1%) | 13 (40.9%) |  |
| Missing | 53 (27.3%) | 25 (47.2%) | 28 (52.8%) |  |
| ***SNPs – IL6 high alleles*** |  |  |  | 0.560 |
| 2 | 71 (36.6%) | 29 (40.8%) | 42 (59.2%) |  |
| 0/1 | 70 (36.1%) | 32 (45.7%) | 38 (54.3%) |  |
| Missing | 53 (27.3%) | 25 (47.2%) | 28 (52.8%) |  |
| ***SNPs – IL1B high alleles*** |  |  |  | 0.778 |
| 2/1 | 126 (64.9%) | 54 (42.9%) | 72 (57.1%) |  |
| 0 | 15 (7.7%) | 7 (46.7%) | 8 (53.3%) |  |
| Missing | 53 (27.3%) | 25 (47.2%) | 28 (52.8%) |  |

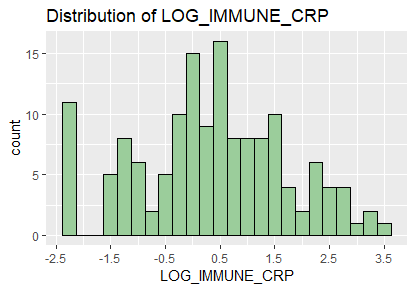
* Continuous Predictors in Mean ± standard deviation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sample Characteristics** | **Overall**  **(N = 194)** | **Fatigue**  **(N = 86)** | **Not Fatigue**  **(N = 108)** | **Bivariate p-value** |
| SF-36 vitality score - baseline | 57.9 ± 21.9 | 45.2 ± 21.2 | 68.1 ± 16.6 | 1.7e-10\*\*\* |
| MFSI-general - baseline | 6.9 ± 5.6 | 9.8 ± 6.1 | 4.6 ± 3.9 | 7.0e-09\*\*\* |
| Age - baseline | 55.5 ± 11.5 | 54.0 ± 11.4 | 56.9 ± 10.5 | 0.07 |
| BMI - baseline | 25.7 ± 6.0 | 25.1 ± 5.8 | 26.1 ± 6.2 | 0.28 |
| Charlson comorbidity index | 0.29 ± 0.59 | 0.43 ± 0.73 | 0.18 ± 0.43 | 0.005\*\* |
| Impact of Events Scale – baseline (IES)\* | 1.7 ± 1.3 | 2.0 ± 1.3 | 1.4 ± 1.2 | 0.003\*\* |
| Fatigue Catastrophizing Scale -baseline (FCS)\* | 1.4 ± 0.5 | 1.7 ± 0.6 | 1.3 ± 0.4 | 7.9e-06\*\*\* |
| Perceived Stress Scale – baseline (PSS)\* | 14.5 ± 6.8 | 17.4 ± 6.9 | 12.3 ± 5.8 | 7.0e-07\*\*\* |
| Pittsburgh Sleep Quality Index – baseline (PSQI) | 6.9 ± 3.8 | 8.7 ± 4.0 | 5.5 ± 3.0 | 9.2e-08\*\*\* |
| CESD - baseline | 11.3 ± 9.8 | 16.6 ± 10.9 | 7.1 ± 6.2 | 5.9e-09\*\*\* |
| Circulating inflammatory markers – baseline \*\* |  |  |  |  |
| Log(CRP) | 0.36 ± 1.4 | 0.48 ± 1.4 | 0.28 ± 1.4 | 0.38 |

\*Note: IES, FCS, and PSS at baseline have overall N=193, fatigue N = 85, non-fatigue N = 108

\*\*Note: Circulating inflammatory markers have overall N=145, fatigue N = 62, non-fatigue N = 83

**Univariate Distributions of Log-transformed immune markers**



**Multivariate Logistic Regression Model (AIC=169.67)**

|  |  |  |
| --- | --- | --- |
|  | Coefficient Estimate | p-value |
| (Intercept) | 6.0 | 0.031\* |
| AGE\_BL | -0.035 | 0.19 |
| BMI\_BL | -0.12 | 0.047\* |
| SF-vitality score (dichotomous) - baseline | 2.1 | 0.0021\*\* |
| white | -0.27 | 0.69 |
| Edu - At most a high school degree | -0.99 | 0.15 |
| Edu - College graduate | -0.78 | 0.22 |
| Employed | -1.5 | 0.010\*\* |
| MARRIED | -0.43 | 0.46 |
| Lumpectomy | -0.38 | 0.66 |
| Mastectomy | -0.70 | 0.49 |
| Chemo only | -0.59 | 0.50 |
| Radiation only | -0.073 | 0.91 |
| Charlson | 1.1 | 0.017\* |
| Ctq - Any childhood maltreatment | -0.35 | 0.53 |
| Prior history of depression | 0.64 | 0.34 |
| IES\_BL | 0.0056 | 0.98 |
| FCS\_BL | 0.022 | 0.98 |
| PSS\_BL | -0.012 | 0.85 |
| PSQI\_BL | 0.14 | 0.12 |
| CESD\_BL | 0.060 | 0.26 |
| SPS Attachment – Max | -0.16 | 0.79 |
| tnf\_2cat | -1.3 | 0.030\* |
| il6\_2cat | -0.55 | 0.35 |
| il1b\_2cat | 0.062 | 0.95 |
| LOG\_IMMUNE\_CRP | 0.43 | 0.070 |

Note: 51 objects were deleted due to missing values, leaving a total sample size of 142 for this model.

**Figure**: Plot of the first two principal components from the 7 Log transformed immune markers with label of outcome variable (fatigue or not)

**ANOVA p-values for Log-transformed immune CRP vs. SNPs**

|  |  |  |  |
| --- | --- | --- | --- |
|  | tnf\_2cat | il6\_2cat | il1b\_2cat |
| LOG\_IMMUNE\_CRP | 0.27 | 0.879 | 0.22 |

**Variable Selection using Stepwise AIC**

* Overall model selection (**AIC = 143.94**)

|  |  |  |
| --- | --- | --- |
|  | **Coefficient Estimate** | **p-value** |
| (Intercept) | 1.5 | 0.27 |
| BMI\_BL | -0.11 | 0.020\* |
| SF-vitality score (dichotomous) - baseline | 1.8 | 0.00079\*\*\* |
| Employed | -1.1 | 0.020\* |
| charlson | 0.80 | 0.043\* |
| PSQI\_BL | 0.14 | 0.064 |
| CESD\_BL | 0.067 | 0.065 |
| tnf\_2cat | -1.1 | 0.047\* |
| LOG\_IMMUNE\_CRP | 0.27 | 0.16 |