**Table 1s.**

**Characteristics of the Study Sample: Comparison of excluded vs. included patients and selected frailty measures**

| **Patient Characteristics** | **Total Sample**N=4,042N(%) | **Included**2,828(70%)% | **Excluded**1,214(30%)% | ***P*-Value** |
| --- | --- | --- | --- | --- |
| **Demographics** |  |  |  |  |
| Age: *65+ years old* (%) | 1,451(36%) | 35 | 39 | 0.021 |
| Female | 2,386(59%) | 60 | 58 | NS |
| Race: Ethnic m*inorities* | 501(12%) | 11 | 15 | <0.001 |
| **SASS1: Employed‡** | 1,730(43%) | 46 | 36 | <0.001 |
| **Frailty Indicators** |  |  |  |  |
| ***Physical Health Related Measures*** |  |  |  |  |
| **\*PH1: Poor health status†** | 694(17%) | 18 | 17 | NS |
| **\*PH2: Worsening physical health†** | 1,444(36%) | 36 | 36 | NS |
| **PH3: High ASA physical status (**ASA ≥ 3**)‡** | 1,614(40%) | 39 | 43 | 0.017 |
| **\*PH4: Physical disability‡** | 484(12%) | 12 | 13 | NS |
| **\*PH5: Muscle weakness‡** | 651(17%) | 17 | 17 | NS |
| **PH6: Complaining of dizziness‡** | 586(14%) | 16 | 12 | 0.002 |
| **\*PH7: Poor physical quality of life (**VR12 score <41**)†** | 1,826(49%) | 48 | 51 | NS |
| ***Emotional/Mental Health Related Measures*** |  |  |  |  |
| **\*MH1: Feeling downhearted and blue**, most/all time **(**VR12 item**)†** | 988(25%) | 25 | 25 | NS |
| **MH2: Feeling Anxious,** most/all the time **(**VR12 item**)†** | 299(7%) | 8 | 7 | NS |
| **\*MH3: Feeling calm & peaceful**, little bit/none of the time**(**VR12 item | 1,283(32%) | 33 | 32 | NS |
| **\*MH4: Worsening emotional health,** compared to last year**†** | 876(22%) | 23 | 21 | NS |
| **MH5: Self-reported memory problems†** | 695(17%) | 17 | 19 | 0.046 |
| **MH6: Screened positive for cognitive ability** **(**AD8**)‡** | 117(3%) | 2 | 4 | 0.001 |
| **\*MH7: Poor mental quality of life (**VR12 score <41**)†** | 522(14%) | 13 | 16 | 0.045 |
| ***Nutrition and weight loss*** |  |  |  |  |
| **FFL1: Low nutrition‡** | 177(4%) | 4 | 5 | NS |
| **FFL2: Low BMI** (<18.5)**‡** | 71(2%) | 2 | 2 | NS |
| **FFL3: Unintentional weight loss** (10+ lbs., past year)**‡** | 180(5%) | 5 | 4 | NS |
| ***Fitness and Functional Limitations*** |  |  |  |  |
| **\*FFL4: Exhibit low energy**, a little bit/none of the time**(**VR12 item**)†** | 737(19%) | 17 | 21 | 0.006 |
| **FFL5: Cardiorespiratory fitness** **(**4-6 METS**)‡** | 3,508(87%) | 89 | 91 | NS |
| **\*FFL6: Exhibit slow physical activities‡** | 1,358(34%) | 34 | 34 | NS |
| **FFL7: Exhibit slow walking speed‡** | 158(4%) | 4 | 3 | 0.018 |
| **\*FFL8: Worsening disability carrying out activities‡** | 286(7%) | 8 | 7 | NS |
| **\*FFL9: Limited in moderate activities of daily living (**VR12 item**)†** | 2,416(60%) | 59 | 62 | 0.002 |
| **\*FFL10: Limited ability in kind of work due to physical health(**VR | 494(13%) | 12 | 13 | NS |
| **\*FFL11: Limited ability to work due to emotional problems(**VR12  | 1,198(30%) | 30 | 28 | NS |
| **\*FFL12: Accomplish less than would like** due to phys.\emo. Proble | 1,954(48%) | 49 | 47 | NS |
| **FFL13: Limited mobility (**Barthel ADL item score**)‡** | 254(6%) | 7 | 5 | 0.003 |
| **\*FFL14: Limited in climbing several flights of stairs (**VR12 item**)†** | 2,265(56%) | 55 | 57 | NS |
| ***Comorbidities and Burden of Chronic Diseases*** |  |  |  |  |
| **CB1:** Age-adjusted Charlson Comorbidity Index **(**CCI≥ 4**)‡** | 298(7%) | 7 | 8 | NS |
| Number of chronic diseases (DM, HTN ,CKD, Asthma, COPD)**‡** | 1,239(31%) | 30 | 33 | 0.012 |
| History of coronary artery disease with myocardial infarction**‡** | 205(5%) | 5 | 6 | NS |
| History of congestive heart failure**‡** | 508(13%) | 15 | 12 | 0.015 |
| History of atrial fibrillation**‡** | 246(6%) | 5 | 8 | 0.010 |
| History of valvular heart disease**‡** | 500(12%) | 11 | 14 | 0.009 |
| History of cerebrovascular Disease/Stroke/TIA**‡** | 226(6%) | 5 | 6 | NS |
| History of anemia**‡** | 784(19%) | 19 | 20 | NS |
| History of cancer**‡** | 1,270(31%) | 31 | 31 | NS |
| Malignant/Metastatic tumor**‡** | 58(1%) | 2 | 1 | NS |
| Experiencing hearing impairment**‡** | 645(16%) | 16 | 16 | NS |
| Experiencing vision impairment**‡** | 1,466(36%) | 38 | 33 | 0.002 |
| Experiencing balance impairment**‡** | 695(17%) | 17 | 19 | 0.048 |
| **CB2:** History of falls with injuries, past six month**‡** | 544(13%) | 13 | 15 | NS |
| **CB3:** Bladder and/or bowels incontinence **(**Barthel items score)**‡** | 555(15%) | 15 | 14 | NS |
| **CB4:** Home medication (4+), current use**‡** | 243(6%) | 6 | 6 | NS |
| ***Social Activities and Social Support*** |  |  |  |  |
| **SASS2: Live alone‡** | 54(1%) | 1 | 1 | NS |
| **SASS3: Have no social support‡** | 235(6%) | 6 | 5 | NS |
| **\*SASS4: Limited social activities** due to phys.\emotional problem**‡** | 1,029(25%) | 25 | 26 | NS |
| ***Behavioral Problem Pattern*** |  |  |  |  |
| Current tobacco user**‡** | 1,849(46%) | 45 | 48% | NS |
| Current alcohol drinker**‡** | 2,779(69%) | 70 | 65 | 0.006 |

† Self-reported item collected using SATISFY-SOS baseline survey implemented during the preoperative assessment.

‡ Preoperative item routinely collected as part of the Review of System (ROS) during the preoperative assessment.

Note:

1) ASA = American Society of Anesthesiologists physical status classification system determined by the anesthesiologist the day of surgery, AD8 = The Ascertain Dementia 8-item Informant Questionnaire and Barthel = Barthel Activities of Daily Living (ADL) Index, both administered as part the preoperative assessment. VR-12 = The Veterans RAND 12 Item Health Survey, a global health measure questionnaire used to assess patient’s overall health and quality of life. The VR12 is part of SATISFY-SOS baseline survey implemented during the preoperative assessment.

2) Items in **bold** (32 items) were used in the Item Response Theory (IRT) analysis. Items with \* form the final set of frailty indicators (18 items) which were included in the Latent Class Analysis (LCA).

**Table 2s. Frequencies of postoperative outcomes across the three frailty phenotypes**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Outcomes** | **Total**N=2,828n(%) | **Not Frail**1,384(49.7)% | **Moderately Frail**978(33.5%)% | **Severely Frail**466(16.7%)% | ***p*-value** |
| **Patient-Reported Complications** |  |  |  |  |  |
| ***In-hospital*** | 365(12.9%) | 9.4 | 13.7 | 21.7 | < 0.001 |
| ***Post-Discharge, within 30 days*** | 184(6.5%) | 5.9 | 6.9 | 7.3 | 0.457 |
| ***Both***  | 89(3.1%) | 2.8 | 3.2 | 4.1 | < 0.001 |
| ***Either***(Postoperative, overall) | 460(16.3%) | 12.5 | 17.5 | 24.9 | < 0.001 |
| **Readmission within 30 days**  | 129(4.6%) | 3.8 | 5.1 | 5.6 | 0.067 |
| **Quality of Life, 30 days (**n=2716**)\*** |  |  |  |  | < 0.001 |
| ***Better*** | 1,718(63.2%) | 56.7 | 71.5 | 65.5 |  |
| ***The Same*** | 754(27.7%) | 35.0 | 19.4 | 23.7 |  |
| ***Worse*** | 244(9.0%) | 8.3 | 9.2 | 10.7 |  |

Note: ‘Patient-Reported Complications’ are patient-reported medical complications while still in hospital after the index surgery or within 30 days post-discharge. ‘Both’ refers to patients who reported experiencing complications both in-hospital and after discharge from the hospital. ‘Either’ refers to patients who reported having complications either while still in-hospital and/or after being discharged. ‘Readmission within 30 days’ is patient’s reported being readmitted to a hospital within the 30 days following the date of surgery. ‘Quality of Life’ is based on patient’s response to the question asking, “How would you rate your quality of life now?” with response formats expressed on a 3-point scale (better, the same or worse than before your procedure), part of SATISFY-SOS 30-day follow-up survey.

\*Of the total sample, 112 patients had missing response (Refused to answer or did not respond)

Figure 1s:

