Probable delirium is a presenting symptom of COVID-19 in frail, older adults: a cohort study of 322 hospitalised and 535 community-based older adults

**SUPPLEMENTARY DATA**

* **Appendix 1:** PRISMA-7 questionnaire, as adapted for the COVID Symptom Study mobile application
* **Appendix 2:** Characteristics of unmatched Hospital and Community-based App Cohorts, according to Frailty Status
* **Appendix 3:** COVID-19 symptoms of age-matched Community-based App Cohort, according to Frailty Status
* **Appendix 4:** Likelihood of receiving a test for COVID-19 amongst the app cohort, according to demographics and self-reported symptoms
* **Appendix 5:** Percentage of Covid-19 symptoms presentation in Community-based App Cohort in participants aged >= 65 years
* **Appendix 6:** Full References

**Appendix 1: PRISMA-7 questionnaire, as adapted for the COVID Symptom Study mobile application**

|  |  |
| --- | --- |
| 1 | What year were you born? |
| 2 | What sex were you assigned at birth? |
| 3 | In general, do you have any health problems that require you to stay at home? |
| 4 | Do you need someone to help you on a regular basis? |
| 5 | If you need help, can you count on someone close to you? |
| 6 | Do you regularly use a stick, walking frame or wheelchair to get about? |
| 7 | In general, do you have any health problems that require you to limit your activities? |

**Appendix 2: Characteristics of unmatched Hospital and Community-based App Cohorts, according to Frailty Status**

Binary variables are presented as count (%) and continuous variables as mean (standard deviation). Frail Hospital = CFS ≥ 5; Frail Community= PRISMA7 ≥3; Fever in hospital data (≥37.5°C)

\*12 patients excluded from final analysis in hospital data due to missing clinical frailty score. \*\*Cancer data available for 424 individuals (177 frail and 247 not frail) in the community-based cohort.

|  |  |  |
| --- | --- | --- |
|  | Hospital Cohort | Community Cohort |
| **Total Sample****(n = 322)\*** | **Frail****(n = 165)** | **Not Frail****(n = 145)** | ***P*-value** | **Total Sample****(n=535)** | **Frail****(n=192)** | **Not Frail****(n=343)** | ***P*-value** |
| Age | 78.58(7.93) | 81.2(7.61) | 75.99(7.31) | 1.09x10-8 | 72.8(7.23) | 78.1(8.03) | 69.8(4.61) | 5.77 x10-28 |
| Number of females | 154(48%) | 88(53%) | 58(40%) | 0.03 | 236(44%) | 80(42%) | 156(46%) | 0.41 |
| BMI | 26.54(6.47) | 25.94(6.09) | 27.01(6.82) | 0.38 | 26.6(4.76) | 26.5(5.27) | 26.6(4.46) | 0.48 |
| Cardiovascular disease | 213(66%) | 112(68%) | 94(64%) | 0.63 | 76(14.2%) | 45(23.4%) | 31(9.0%) | 8.65 x10-6 |
| Diabetes | 132(41%) | 64(38%) | 61(42%) | 0.56 | 73(13.6%) | 37(19.3%) | 36(10.5%) | 0.006 |
| Respiratory disease | 125(38%) | 69(42%) | 51(35%) | 0.29 | 101(18.9%) | 48(25.0%) | 53(15.5%) | 0.008 |
| Psychiatric condition | 39(12%) | 23(14%) | 13(8%) | 0.21 | - | - | - | - |
| Dementia | 73(23%) | 64(39%) | 7(4%) | 1.79x10-13 | - | - | - | - |
| Cancer\*\* | 57(17%) | 30(18%) | 26(17%) | 1.00 | 44(10.4%) | 34(19.2%) | 10(4.0%) | 1.00 x10-13 |
| Kidney disease | - | - | - | - | 27(5%) | 21(10.9%) | 6(1.7%) | 1.059x10-5 |

**Appendix 3: COVID-19 symptoms of age-matched Community-based App Cohort, according to Frailty Status**

Binary variables are presented as count (%) and continuous variables as mean (standard deviation). Frail = PRISMA7 ≥3. P-values are FDR adjusted at 5%

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Symptom | Total Sample(n=238) | Frail(n=119) | Not Frail(n=119) | P-value | OR (95% CI) |
| Loss of smell | 58(24.6%) | 24(20.2%) | 34(28.6%) | 0.20 | 0.63(0.34-1.14) |
| Diarrhoea | 47(19.9%) | 25(21.0%) | 22(18.5%) | 0.67 | 1.17(0.62-2.25) |
| Muscle Pains | 48(20.3%) | 29(24.4%) | 19(16.0%) | 0.19 | 1.70(0.90 - 3.29) |
| Skipped Meals | 97(41.1%) | 55(46.2%) | 42(35.3%) | 0.17 | 1.58(0.94-2.66) |
| Abdominal Pains | 34(14.4%) | 19(16.0%) | 15(12.6%) | 0.54 | 1.32(0.64-2.77) |
| Sore throat | 42(17.8%) | 25(21.0%) | 17(14.3%) | 0.25 | 1.60(0.82-3.20) |
| Chest pain | 56(23.7%) | 35(29.4%) | 21(17.6%) | 0.10 | 1.95(1.06-3.65) |
| Headache | 52(22%) | 25(21.0%) | 27(22.7%) | 0.75 | 0.91(0.49-1.68) |
| Hoarse voice | 67(28.4%) | 37(31.1%) | 30(25.2%) | 0.40 | 1.34(0.76-2.38) |

**Appendix 4: Likelihood of receiving a test for COVID-19 amongst the app cohort, according to demographics and self-reported symptoms**

Multivariate models consider all demographic features and symptoms reported in the table as predictors for receiving a test. Age and BMI are continuous variables, gender is binary with 0 for female and 1 for male, and all symptoms are binary absent/present.

|  |  |
| --- | --- |
| **Predictor** | **Odds ratios (95% CI)** |
| **General population** | **Over 65s** |
| **Univariate** | **Multivariate** | **Univariate** | **Multivariate** |
| Age | 0.99 (0.99 - 0.99) | 1.00 (0.98 - 1.01) | 0.99 (0.98 - 0.99) | 0.96 (0.93 - 1.00) |
| Gender | 0.73 (0.71 - 0.75) | 0.94 (0.92 - 0.96) | 1.14 (1.06 - 1.22) | 1.28 (1.20 - 1.38) |
| BMI | 1.03 (1.02 - 1.03) | 1.07 (1.06 - 1.08) | 1.02 (1.01 - 1.02) | 1.01 (0.98 - 1.05) |
| Fever | 8.88 (8.59 - 9.18) | 2.09 (2.01 - 2.17) | 12.77 (11.07 - 14.72) | 1.94 (1.63 - 2.30) |
| Persistent cough | 8.03 (7.82 - 8.24) | 2.38 (2.30 - 2.46) | 9.70 (8.75 - 10.76) | 2.06 (1.81 - 2.36) |
| Fatigue | 4.09 (4.03 - 4.15) | 2.21 (2.16 - 2.26) | 5.26 (5.00 - 5.55) | 2.76 (2.53 - 3.00) |
| Shortness of breath | 2.58 (2.55 - 2.62) | 1.10 (1.08 - 1.12) | 3.07 (2.92 - 3.22) | 1.29 (1.20 - 1.38) |
| Diarrhoea | 4.20 (4.06 - 4.33) | 1.24 (1.19 - 1.29) | 6.49 (5.79 - 7.29) | 1.43 (1.24 - 1.65) |
| Delirium | 4.08 (3.93 - 4.24) | 0.69 (0.66 - 0.72) | 9.07 (8.14 - 10.10) | 1.31 (1.14 - 1.51) |
| Skipped meals | 6.08 (5.90 - 6.27) | 1.19 (1.15 - 1.24) | 10.06 (9.06 - 11.18) | 1.42 (1.23 - 1.65) |
| Abdominal pain | 4.48 (4.34 - 4.64) | 1.22 (1.17 - 1.27) | 6.64 (5.88 - 7.49) | 1.41 (1.22 - 1.64) |
| Chest pain | 5.89 (5.74 - 6.06) | 1.45 (1.40 - 1.50) | 7.98 (7.14 - 8.93) | 1.40 (1.21 - 1.62) |
| Hoarse voice | 6.33 (6.13 - 6.54) | 1.33 (1.28 - 1.38) | 8.78 (7.83 - 9.85) | 1.75 (1.52 - 2.01) |
| Loss of smell | 7.01 (6.79 - 7.24) | 1.55 (1.49 - 1.61) | 7.85 (6.82 - 9.03) | 0.85 (0.71 - 1.01) |

**Appendix 5: Percentage of Covid-19 symptoms presentation in Community-based App Cohort in participants aged >= 65 years**



**Appendix 6: Full References**

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