**Supplement**

**Psychiatric Disorders Associated with Risk for Clinical Diagnosis of Long COVID**

|  |
| --- |
| **Supplemental Table 1.** **Associations between psychiatric disorders and long COVID diagnosis (at least one U09·9 diagnosis) among VA patients with positive SARS-CoV-2 tests, in the full sample and age-stratified** |
|  | **Model 1** | **Model 2** |
|  | *RR (95% CI)* | *p-value* | *RR (95% CI)* | *p-value* |
| *Full Sample (n=660,217)* |  |  |  |  |
| Any Psychiatric Disorder | 1·13 (1·08, 1·18) | <·001 | 1·09 (1·06, 1·13) | <·001 |
| Major Depressive Disorder | 1·19 (1·14, 1·25) | <·001 | 1·15 (1·10, 1·19) | <·001 |
| Posttraumatic Stress Disorder | 1·19 (1·14, 1·24) | <·001 | 1·14 (1·10, 1·19) | <·001 |
| Anxiety Disorder | 1·22 (1·14, 1·29) | <·001 | 1·17 (1·12, 1·23) | <·001 |
| Adjustment Disorder | 1·16 (1·09, 1·24) | <·001 | 1·12 (1·05, 1·18) | <·001 |
| Alcohol Use Disorder | 1·00 (0·94, 1·05) | 0·863 | 1·00 (0·94, 1·05) | 0·929 |
| Substance Use Disorder | 0·81 (0·76, 0·86) | <·001 | 0·81 (0·77, 0·86) | <·001 |
| Bipolar Disorder | 0·96 (0·87, 1·06) | 0·404 | 0·93 (0·85, 1·02) | 0·124 |
| Psychotic Disorder | 0·76 (0·68, 0·86) | <·001 | 0·75 (0·68, 0·84) | <·001 |
|  |  |  |  |  |
| *Age 18-39 (n=97,446)* |  |  |  |  |
| Any Psychiatric Disorder | 1·12 (1·03, 1·21) | 0·007 | 1·09 (1·01, 1·18) | 0·026 |
| Major Depressive Disorder | 1·18 (1·07, 1·31) | 0·001 | 1·15 (1·04, 1·27) | 0·006 |
| Posttraumatic Stress Disorder | 1·12 (1·02, 1·25) | 0·015 | 1·10 (1·00, 1·20) | 0·041 |
| Anxiety Disorder | 1·20 (1·12, 1·29) | <·001 | 1·18 (1·09, 1·26) | <·001 |
| Adjustment Disorder | 1·19 (1·03, 1·38) | 0·016 | 1·16 (1·00, 1·34) | 0·044 |
| Alcohol Use Disorder | 1·01 (0·94, 1·09) | 0·776 | 1·03 (0·95, 1·12) | 0·427 |
| Substance Use Disorder | 0·77 (0·70, 0·85) | <·001 | 0·81 (0·74, 0·89) | <·001 |
| Bipolar Disorder | 0·92 (0·76, 1·12) | 0·402 | 0·91 (0·77, 1·09) | 0·317 |
| Psychotic Disorder | 0·78 (0·55, 1·09) | 0·149 | 0·79 (0·56, 1·10) | 0·166 |
|  |  |  |  |  |
| *Age 40-64 (n=265,672)* |  |  |  |  |
| Any Psychiatric Disorder | 1·10 (1·05, 1·15) | <·001 | 1·07 (1·03, 1·11) | <·001 |
| Major Depressive Disorder | 1·17 (1·11, 1·22) | <·001 | 1·13 (1·09, 1·17) | <·001 |
| Posttraumatic Stress Disorder | 1·14 (1·09, 1·19) | <·001 | 1·10 (1·06, 1·15) | <·001 |
| Anxiety Disorder | 1·19 (1·12, 1·27) | <·001 | 1·16 (1·10, 1·23) | <·001 |
| Adjustment Disorder | 1·12 (1·07, 1·17) | <·001 | 1·08 (1·03, 1·13) | 0·002 |
| Alcohol Use Disorder | 0·97 (0·91, 1·04) | 0·457 | 1·00 (0·93, 1·06) | 0·919 |
| Substance Use Disorder | 0·75 (0·68, 0·82) | <·001 | 0·77 (0·70, 0·84) | <·001 |
| Bipolar Disorder | 0·90 (0·81, 1·01) | 0·073 | 0·89 (0·80, 0·98) | 0·013 |
| Psychotic Disorder | 0·74 (0·63, 0·88) | <·001 | 0·74 (0·63, 0·87) | <·001 |
|  |  |  |  |  |
| *Age ≥65 (n=297,098)* |  |  |  |  |
| Any Psychiatric Disorder | 1·17 (1·10, 1·23) | <·001 | 1·12 (1·07, 1·17) | <·001 |
| Major Depressive Disorder | 1·22 (1·16, 1·29) | <·001 | 1·16 (1·11, 1·21) | <·001 |
| Posttraumatic Stress Disorder | 1·28 (1·20, 1·38) | <·001 | 1·23 (1·15, 1·31) | <·001 |
| Anxiety Disorder | 1·22 (1·12, 1·32) | <·001 | 1·16 (1·09, 1·25) | <·001 |
| Adjustment Disorder | 1·19 (1·07, 1·32) | 0·001 | 1·14 (1·04, 1·24) | 0·004 |
| Alcohol Use Disorder | 1·00 (0·91, 1·09) | 0·966 | 0·98 (0·90, 1·07) | 0·606 |
| Substance Use Disorder | 0·97 (0·88, 1·07) | 0·568 | 0·93 (0·85, 1·02) | 0·119 |
| Bipolar Disorder | 1·10 (0·95, 1·28) | 0·209 | 1·05 (0·91, 1·21) | 0·486 |
| Psychotic Disorder | 0·79 (0·68, 0·93) | 0·005 | 0·77 (0·67, 0·90) | 0·001 |
| CI=confidence intervals. RR=relative risk. VA=U.S. Department of Veterans Affairs. Reference group for each model is No Psychiatric Disorders. Outcomes are long COVID diagnosis (U09·9 clinical code at 1 or more encounters).Model 1: age, age squared, sex, race/ethnicity, and time.Model 2: Model 1 plus vaccination status, medical comorbidities, and smoking. |

|  |
| --- |
| **Supplemental Table 2. Associations between psychiatric disorders and long COVID diagnosis among VA patients with positive SARS-CoV-2 tests, in the full sample and age-stratified adjusting for primary care utilization** |
|  | **Covariates** | **Covariate + Utilization** |
|  | *RR (95% CI)* | *p-value* | *RR (95% CI)* | *p-value* |
| *Full Sample (n=660,217)* |  |  |  |  |
| Any Psychiatric Disorder | 1·28 (1·21, 1·35) | <·001 | 1·27 (1·20, 1·34) | <·001 |
| Major Depressive Disorder | 1·36 (1·28, 1·44) | <·001 | 1·35 (1·27, 1·44) | <·001 |
| Posttraumatic Stress Disorder | 1·48 (1·40, 1·57) | <·001 | 1·47 (1·39, 1·56) | <·001 |
| Anxiety Disorder | 1·41 (1·32, 1·52) | <·001 | 1·40 (1·30, 1·51) | <·001 |
| Adjustment Disorder | 1·40 (1·28, 1·52) | <·001 | 1·38 (1·26, 1·51) | <·001 |
| Alcohol Use Disorder | 1·21 (1·08, 1·36) | 0·001 | 1·20 (1·07, 1·35) | 0·002 |
| Substance Use Disorder | 0·88 (0·79, 0·98) | 0·021 | 0·87 (0·78, 0·98) | 0·018 |
| Bipolar Disorder | 1·04 (0·94, 1·16) | 0·446 | 1·03 (0·92, 1·16) | 0·556 |
| Psychotic Disorder | 0·78 (0·64, 0·94) | 0·010 | 0·78 (0·64, 0·94) | 0·010 |
|  |  |  |  |  |
| *Age 18-39 (n=97,446)* |  |  |  |  |
| Any Psychiatric Disorder | 1·51 (1·26, 1·81) | <·001 | 1·46 (1·22, 1·74) | <·001 |
| Major Depressive Disorder | 1·59 (1·31, 1·94) | <·001 | 1·53 (1·26, 1·86) | <·001 |
| Posttraumatic Stress Disorder | 1·66 (1·41, 1·94) | <·001 | 1·59 (1·37, 1·86) | <·001 |
| Anxiety Disorder | 1·65 (1·37, 1·98) | <·001 | 1·58 (1·32, 1·89) | <·001 |
| Adjustment Disorder | 1·71 (1·35, 2·17) | <·001 | 1·64 (1·30, 2·07) | <·001 |
| Alcohol Use Disorder | 1·55 (1·32, 1·82) | <·001 | 1·49 (1·26, 1·77) | <·001 |
| Substance Use Disorder | 1·20 (1·04, 1·39) | 0·014 | 1·15 (0·99, 1·34) | 0·077 |
| Bipolar Disorder | 1·09 (0·93, 1·29) | 0·282 | 1·04 (0·89, 1·22) | 0·600 |
| Psychotic Disorder | 1·00 (0·79, 1·27) | 0·993 | 0·95 (0·75, 1·21) | 0·694 |
|  |  |  |  |  |
| *Age 40-64 (n=265,672)* |  |  |  |  |
| Any Psychiatric Disorder | 1·26 (1·18, 1·33) | <·001 | 1·25 (1·18, 1·33) | <·001 |
| Major Depressive Disorder | 1·34 (1·26, 1·43) | <·001 | 1·34 (1·25, 1·43) | <·001 |
| Posttraumatic Stress Disorder | 1·47 (1·38, 1·58) | <·001 | 1·47 (1·37, 1·58) | <·001 |
| Anxiety Disorder | 1·39 (1·30, 1·50) | <·001 | 1·39 (1·29, 1·50) | <·001 |
| Adjustment Disorder | 1·36 (1·26, 1·48) | <·001 | 1·36 (1·25, 1·47) | <·001 |
| Alcohol Use Disorder | 1·18 (1·02, 1·36) | 0·025 | 1·18 (1·02, 1·36) | 0·028 |
| Substance Use Disorder | 0·77 (0·67, 0·89) | <·001 | 0·77 (0·67, 0·89) | <·001 |
| Bipolar Disorder | 0·99 (0·84, 1·17) | 0·922 | 0·99 (0·84, 1·17) | 0·912 |
| Psychotic Disorder | 0·72 (0·57, 0·90) | 0·005 | 0·72 (0·57, 0·91) | 0·005 |
|  |  |  |  |  |
| *Age ≥65 (n=297,098)* |  |  |  |  |
| Any Psychiatric Disorder | 1·22 (1·14, 1·31) | <·001 | 1·21 (1·13, 1·31) | <·001 |
| Major Depressive Disorder | 1·29 (1·20, 1·39) | <·001 | 1·29 (1·18, 1·40) | <·001 |
| Posttraumatic Stress Disorder | 1·36 (1·21, 1·53) | <·001 | 1·35 (1·20, 1·52) | <·001 |
| Anxiety Disorder | 1·28 (1·15, 1·44) | <·001 | 1·27 (1·13, 1·44) | <·001 |
| Adjustment Disorder | 1·24 (1·09, 1·41) | 0·001 | 1·23 (1·08, 1·41) | 0·002 |
| Alcohol Use Disorder | 1·00 (0·87, 1·16) | 0·972 | 1·00 (0·86, 1·15) | 0·975 |
| Substance Use Disorder | 0·90 (0·74, 1·10) | 0·310 | 0·90 (0·74, 1·10) | 0·316 |
| Bipolar Disorder | 1·23 (0·99, 1·52) | 0·061 | 1·23 (0·99, 1·53) | 0·066 |
| Psychotic Disorder | 0·82 (0·59, 1·13) | 0·218 | 0·83 (0·61, 1·15) | 0·263 |
| CI=confidence intervals. RR=relative risk. VA=U.S. Department of Veterans Affairs. Reference group for each model is No Psychiatric Disorders. Outcomes are long COVID diagnosis (U09·9 clinical code at 2 or more encounters).Covariates are age, age squared, sex, race/ethnicity, time, vaccination status, medical comorbidities, and smoking. Note: these are the same primary models as presented in Model 2 of Table 2.Primary care utilization includes categorical number of primary care visits (0-1, 2-3, 4-6, 7+) in the year before COVID-19 diagnosis. |