Table S1. International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9) diagnostic codes for breast cancer subtypes

| Breast cancer classification | ICD-9 code |
| --- | --- |
| Malignant neoplasm of female breast | 174 |
| Malignant neoplasm of nipple and areola of female breast | 174.0 |
| Malignant neoplasm of central portion of female breast | 174.1 |
| Malignant neoplasm of upper inner quadrant of female breast | 174.2 |
| Malignant neoplasm of lower inner quadrant of female breast | 174.3 |
| Malignant neoplasm of upper outer quadrant of female breast | 174.4 |
| Malignant neoplasm of lower outer quadrant of female breast | 174.5 |
| Malignant neoplasm of axillary tail of female breast | 174.6 |
| Malignant neoplasm of other specified sites breast | 174.8 |
| Malignant neoplasm of the breast (female) unspecified | 174.9 |

ICD-9 = International Classification of Diseases, Ninth Revision, Clinical Modifications

Table S2. Generic names for the identification of antipsychotics

| Antipsychotic type | Generic name |
| --- | --- |
| First-generation antipsychotics | haloperidol, chlorpromazine hydrochloride, sulpiride, trifluoperazine, fluphenazine, flupentixol hydrochloride, zuclopenthixol decanoate, pericyazine, pimozide, thiothixene thioridazine, pperphenazine, molindone |
| Second-generation antipsychotics | risperidone, quetiapine, clozapine, olanzapine, amisulpride, aripiprazole, paliperidone, ziprasidone, sertindole, asenapine |

Manuscript: *Breast cancer risks following antipsychotic use in women with bipolar disorder versus schizophrenia: a territory-wide nested case-control study spanning two decades*

Table S3. Generic names for the identification of medication history

| Medication | Generic names |
| --- | --- |
| Calcium channel blocker | amlodipine, felodipine, isradipine, lacidipine, lercanidipine, nifedipine, nitredipine, nimodipine, nicardipine, valsartan/ amlodipine, diltiazem, verapamil |
| Loop diuretics | frusemide/ furosemide, bumetanide |
| Opioids | bupreorphine, codeine, dihydrocodeine, fentanyl, hydromorphine, methadone, morphine, oxycodone, oxycodone/ naloxone, pentazocine, pethidine, tramadol, dipipanone/ cyclizine |
| Selective serotonin reuptake inhibitor | citalopram, escitalopram, fluoxetine, fluvoxamine, paroxetine, sertraline |
| Serotonin modulators | vortioxetine |
| Serotonin–norepinephrine reuptake inhibitor | duloxetine, desvenlafaxine, venlafaxine |
| Tricyclic antidepressant | amitriptyline, clomipramine, dosulepin/ dothipein, doxepin, imipramine, notriptyline, trimipramine |
| Tetracyclic antidepressants | maprotilikne, mirtazapine, mianserin |
| Hypnotics | chloral hydrate, clomethiazole/ chlormethiazole, cloral betaine, flurazepam, lormetazepam, melatonin, midazolam, nitrazepam, sodium oxybate, temazepam, zaleplon, zolpidem, zopiclone |
| Anxioloytics | alprazolam, bromazepam, buspirone, chlordiazepoxide, diazepam, lorazepam |
| Benzodiazepines | clobazam, clonazepam, dipotassium clorazepate, flunitrazepam, prazepam, triazolam |
| Statins | atorvastatin, simvastatin, fluvastatin, lovastatin, pravastatin, rouvastatin |
| Non-steroidal anti-inflammatory drug | ibuprofen, diclofenac, indomethacin, ketoprofen, ketorolac, mefenamic, naproxen, piroxicam, celecoxib, etoricoxib |

Table S4. International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9) diagnostic codes for medical history covariate

| Clinical history covariates | ICD-9 code |
|---|---|
| Hypertension | 401.00 – 401.99 |
| Other circulatory system diseases | 390.00 - 459.99 (exclude 401.00 – 401.99) |
| Obesity | 278.00 |
| Overweight | 278.02 |
| Diabetes | 250.00 |
| Suicide/ self-inflicted Injury | E958.9 |
| Alcohol abuse unspecified | 305.00 |
| Asthma | 493 – 493.92 |
| Other chronic pulmonary disease | 490.00 - 496.99 (exclude 493 – 493.92) |

ICD-9 = International Classification of Diseases, Ninth Revision, Clinical Modifications

Table S5. Adjusted odds ratio (aOR) multipliers for the interaction between antipsychotic use and bipolar disorder (schizophrenia as referent) stratified by breast cancer subtype exclusion

| Subtype excluded (ICD-9-CM) | Interaction term | Control participants, n (%) | Case Patients, n (%) | aOR multiplier (95% confidence interval) | *p*-value |
|---|---|---|---|---|---|
| 174.9 | First-generation antipsychotics X bipolar disorder | 88 (35.8) | 14 (46.7) | 1.532 (0.63 - 3.727) | 0.347 |
|  | Second-generation antipsychotics X bipolar disorder | 21 (8.5) | 4 (13.3) | 2.45 (0.731 - 8.212) | 0.146 |
| 174.8 | First-generation antipsychotics X bipolar disorder | 332 (35.9) | 48 (44.9) | 1.59 (1.025 - 2.467) | 0.038 |
|  | Second-generation antipsychotics X bipolar disorder | 85 (9.2) | 17 (15.9) | 2.079 (1.139 - 3.795) | 0.017 |
| 174.6 | First-generation antipsychotics X bipolar disorder | 332 (35.7) | 48 (44.0) | 1.592 (1.026 - 2.47) | 0.038 |
|  | Second-generation antipsychotics X bipolar disorder | 85 (9.1) | 17 (15.6) | 2.075 (1.136 - 3.788) | 0.018 |
| 174.5 | First-generation antipsychotics X bipolar disorder | 322 (35.7) | 46 (43.4) | 1.548 (0.994 - 2.411) | 0.053 |
|  | Second-generation antipsychotics X bipolar disorder | 84 (9.3) | 16 (15.1) | 1.963 (1.059 - 3.639) | 0.032 |
| 174.4 | First-generation antipsychotics X bipolar disorder | 292 (35.7) | 45 (46.9) | 1.792 (1.124 - 2.855) | 0.014 |
|  | Second-generation antipsychotics X bipolar disorder | 73 (8.9) | 14 (14.6) | 1.784 (0.921 - 3.459) | 0.086 |
| 174.3 | First-generation antipsychotics X bipolar disorder | 323 (35.3) | 46 (43.0) | 1.563 (1.003 - 2.437) | 0.049 |
|  | Second-generation antipsychotics X bipolar disorder | 82 (9.0) | 17 (15.9) | 2.22 (1.21 - 4.074) | 0.010 |
| 174.2 | First-generation antipsychotics X bipolar disorder | 321 (35.5) | 46 (43.4) | 1.595 (1.022 - 2.49) | 0.040 |
|  | Second-generation antipsychotics X bipolar disorder | 83 (9.2) | 17 (16.0) | 2.153 (1.175 - 3.945) | 0.013 |
| 174.1 | First-generation antipsychotics X bipolar disorder | 314 (35.8) | 43 (42.2) | 1.453 (0.922 - 2.291) | 0.108 |
|  | Second-generation antipsychotics X bipolar disorder | 82 (9.4) | 17 (16.7) | 2.15 (1.171 - 3.946) | 0.014 |

ICD-9-CM = International Classification of Diseases, Ninth Revision, Clinical Modifications. There were no cases of 174.0

Table S6 Adjusted odds ratios (aOR) of breast cancer excluded other cancer by antipsychotic use and psychiatric disorder (schizophrenia versus bipolar disorder)

| Antipsychotic use status | Control participants, n (%) | Case Patients, n (%) | Crude odd ratio (95% confidence interval) | aOR (95% confidence interval) |
|---|---|---|---|---|
| Schizophrenia | n=3642 | n=457 | | |
|    First-generation antipsychotics | 2496 (68.5) | 353 (77.2) | 1.801 (1.389 - 2.335) | 1.703 (1.296 - 2.238) |
|    Second-generation antipsychotics | 1206 (33.1) | 146 (31.9) | 1.078 (0.857 - 1.358) | 0.995 (0.775 - 1.278) |
| Bipolar disorder | n=595 | n=87 | | |
|    First-generation antipsychotics | 194 (32.6) | 39 (44.8) | 1.820 (1.118 - 2.963) | 1.967 (1.119 - 3.456) |
|    Second-generation antipsychotics | 69 (11.6) | 13 (14.9) | 1.523 (0.756 - 3.065) | 1.530 (0.697 - 3.358) |

Significant interaction between schizophrenia and first-generation antipsychotics ($p < 0.001$) and bipolar disorder and first-generation antipsychotics ($p = 0.019$) but not between the interaction of schizophrenia or bipolar disorder with second-generation antipsychotics ($p = 0.971$ and $p = 0.289$, respectively)

Table S7. Number and proportions of breast cancer case participants using different antipsychotics

| Antipsychotic use | Generic name | Schizophrenia case participants (n=563), n (%) | Bipolar disorder case participants (n=109), n (%) |
|---|---|---|---|
| Any antipsychotics | - | 484 (86.0) | 60 (55.0) |
| First-generation antipsychotics | Haloperidol | 109 (19.4) | 12 (11.0) |
| | Chlorpromazine hydrochloride | 115 (20.4) | 17 (15.6) |
| | Sulpiride | 74 (13.1) | 6 (5.5) |
| | Trifluoperazine | 140 (24.9) | 8 (7.3) |
| | Fluphenazine | 47 (8.3) | 3 (2.8) |
| | Flupentixol hydrochloride | 85 (15.1) | 3 (2.8) |
| | Zuclopenthixol decanoate | 28 (5.0) | 0 (0.0) |
| | Pericyazine | 3 (0.5) | 0 (0.0) |
| | Pimozide | 9 (1.6) | 1 (0.9) |
| | Thiothixene | 4 (0.7) | 0 (0.0) |
| | Thioridazine | 17 (3.0) | 2 (1.8) |
| | Perphenazine | 26 (4.6) | 1 (0.9) |
| | Molindone | 0 (0.0) | 0 (0.0) |
| Second-generation antipsychotics | Risperidone | 83 (14.7) | 8 (7.3) |
| | Quetiapine | 37 (6.6) | 4 (3.7) |
| | Clozapine | 24 (4.3) | 3 (2.8) |
| | Olanzapine | 50 (8.9) | 3 (2.8) |
| | Amisulpride | 24 (4.3) | 1 (0.9) |
| | Aripiprazole | 17 (3.0) | 0 (0.0) |
| | Paliperidone | 12 (2.1) | 1 (0.9) |
| | Ziprasidone | 6 (1.1) | 0 (0.0) |
| | Sertindole | 0 (0.0) | 0 (0.0) |
| | Asenapine | 0 (0.0) | 0 (0.0) |