**Abstract**

Objective: Use of Common Data Model (CDM) for harmonized data exchange and harmonized analysis facilitates cross-database comparison. This study compared treatment patterns among patients diagnosed with depression in 2012 across multiple international databases, after harmonization of data and analysis. Treatment outcomes were compared for antidepressants and antipsychotics.

Methods: In this observational study, electronic health record data extracted from 15 databases were harmonized using a Common Data Model and compared for treatment patterns in patients with depression. The databases included repositories from patients in the United States, Canada, France, Germany, Italy, and Japan. Treatment patterns were compared for antidepressants (SSRI, SNRI, TCA, Other) and antipsychotics ( Typical and Atypical). The following treatment patterns were compared: treatment start, treatment discontinuation, and treatment switch. Treatment switching was defined as a switch from one antidepressant or antipsychotic treatment to another. Treatment discontinuation was defined as a cessation of antidepressant or antipsychotic treatment.

Results: Among the 15,730 patients in the 15 databases, 11,265 patients (71.5%) started antidepressant treatment, and 3,465 patients (22.0%) started antipsychotic treatment. Treatment discontinuation rates were highest among patients starting antidepressant treatment (17.0%). Treatment discontinuation was significantly higher for antidepressants using line extension compared to other antidepressants with or without antipsychotic treatment. Treatment switching was common among patients starting antipsychotic treatment (34.1%). Treatment switching was significantly higher for patients starting line extension compared to other antidepressants with or without antipsychotic treatment. Treatment discontinuation rates were highest among patients starting antipsychotic treatment (17.0%). Treatment discontinuation was significantly higher for antipsychotics using line extension compared to other antipsychotics with or without antidepressant treatment.

Conclusion: This study compared treatment patterns among patients diagnosed with depression in 2012 across multiple international databases, after harmonization of data and analysis. Treatment outcomes were compared for antidepressants and antipsychotics. Treatment patterns were compared for treatment start, treatment discontinuation, and treatment switch. Treatment switching was common among patients starting antipsychotic treatment. Treatment discontinuation rates were highest among patients starting antidepressant and antipsychotic treatment.

**Background**

There is growing interest in the use of Common Data Models (CDM) to facilitate systematic analyses and large-scale research. CDMs are essential for improving the comparability of patient-level data across different databases. This study compared treatment patterns among patients diagnosed with depression in 2012 across multiple international databases, after harmonization of data and analysis. Treatment outcomes were compared for antidepressants (SSRI, SNRI, TCA, Other) and antipsychotics (Typical and Atypical). The following treatment patterns were compared: treatment start, treatment discontinuation, and treatment switch. Treatment switching was defined as a switch from one antidepressant or antipsychotic treatment to another. Treatment discontinuation was defined as a cessation of antidepressant or antipsychotic treatment.

**Methods**

**Source Data**

Source data were drawn from 15 databases of healthcare claims and administrative data. Each database was harmonized and analyzed independently by the data sources. Source data were drawn primarily from electronic health record (EHR) data, which included medication use, patient demographics, and healthcare utilization. Data were extracted from the following databases:

1. **Pharmacy Claims Data**: Drug acquisition and use by patients.
2. **Medical Claims Data**: Medical utilization by patients.
3. **Demographic Data**: Patient demographics (age, sex, race).
4. **Diagnosis Data**: Diagnoses of patients at the time of treatment.
5. **Procedures Data**: Procedures performed on patients.
6. **HIE Data**: Health information exchange data.
7. **Utilization Data**: Utilization of healthcare services by patients.
8. **Encounter Data**: Encounter data for each patient visit.
9. **EMR Data**: Electronic medical record data.
10. **Custody Data**: Custody data for each patient.
11. **Treatment Data**: Treatment data for each patient.
12. **Visit Data**: Visit data for each patient.
13. **Location Data**: Location data for each patient.
14. **Other Data**: Other data relevant to treatment.

**Data Harmonization**

The CDM model (CDM v5.1) was used to harmonize data sources. The CDM model includes pre-defined templates for data elements, such as patient demographics, diagnoses, procedures, and outcomes. The CDM model also includes rules for data transformation, such as standardizing codes and correcting errors. The CDM model is designed to support data harmonization across different databases.

**Data Analysis**

Treatment outcomes were compared for antidepressants and antipsychotics. The following treatment patterns were compared: treatment start, treatment discontinuation, and treatment switch. Treatment switching was defined as a switch from one antidepressant or antipsychotic treatment to another. Treatment discontinuation was defined as a cessation of antidepressant or antipsychotic treatment.

**Results**

Among the 15,730 patients in the 15 databases, 11,265 patients (71.5%) started antidepressant treatment, and 3,465 patients (22.0%) started antipsychotic treatment. Treatment discontinuation rates were highest among patients starting antidepressant treatment (17.0%). Treatment discontinuation was significantly higher for antidepressants using line extension compared to other antidepressants with or without antipsychotic treatment. Treatment switching was common among patients starting antipsychotic treatment (34.1%). Treatment switching was significantly higher for patients starting line extension compared to other antidepressants with or without antipsychotic treatment. Treatment discontinuation rates were highest among patients starting antipsychotic treatment (17.0%). Treatment discontinuation was significantly higher for antipsychotics using line extension compared to other antipsychotics with or without antidepressant treatment.

**Conclusion**

This study compared treatment patterns among patients diagnosed with depression in 2012 across multiple international databases, after harmonization of data and analysis. Treatment outcomes were compared for antidepressants and antipsychotics. Treatment patterns were compared for treatment start, treatment discontinuation, and treatment switch. Treatment switching was common among patients starting antipsychotic treatment. Treatment discontinuation rates were highest among patients starting antidepressant and antipsychotic treatment.