Untitled

Seth Bauer-Martinez

6/30/2020

Abstract

A patient was considered positive for DMII or MDD if any of the following ICD-9 codes were recorded for that patient across all hospital admissions.

ICD-9 CM codes defining DMII

Non-specific code 250 Diabetes mellitus

- 250.00 DM type II or unspecified type w/o complication, not stated as uncontrolled)
- 250.02 DM type II or unspecified type w/o complication, uncontrolled)
- 250.10 DM type II or unspecified type w/ ketoacidosis, not stated as uncontrolled)
- 250.12 DM type II or unspecified type w/ ketoacidosis, uncontrolled)
- 250.20 DM type II or unspecified type w/ hyperosmolarity, not stated as uncontrolled)
- 250.22 DM type II or unspecified type w/ hyperosmolarity, uncontrolled)
- 250.30 DM type II or unspecified type w/ other coma, not stated as uncontrolled)
- 250.32 DM type II or unspecified type w/ other coma, uncontrolled)
- 250.40 DM type II or unspecified type w/ renal manifestations, not stated as uncontrolled)
- 250.42 DM type II or unspecified type w/ renal manifestations, uncontrolled)
- 250.50 DM type II or unspecified type w/ ophthalmic manifestations, not stated as uncontrolled)
- 250.52 DM type II or unspecified type w/ ophthalmic manifestations, uncontrolled)
- 250.60 DM type II or unspecified type w/ neurological manifestations, not stated as uncontrolled)
- 250.62 DM type II or unspecified type w/ neurological manifestations, uncontrolled)
- 250.70 DM type II or unspecified type w/ peripheral circulatory disorders, not stated as uncontrolled)
- 250.72 DM type II or unspecified type w/ peripheral circulatory disorders, uncontrolled)
- 250.80 DM type II or unspecified type w/ other specified manifestations, not stated as uncontrolled)
- 250.82 DM type II or unspecified type w/ other specified manifestations, uncontrolled)
- 250.90 DM type II or unspecified type w/ unspecified complication, not stated as uncontrolled)
- 250.92 DM type II or unspecified type w/ unspecified complication, uncontrolled)

ICD-9 CM codes defining MDD

Non-specific code 296 Episodic mood disorders

- 296.20 Major depressive affective disorder, single episode, unspecified
- 296.21 Major depressive affective disorder, single episode, mild
- 296.22 Major depressive affective disorder, single episode, moderate
- 296.23 Major depressive affective disorder, single episode, severe
- 296.24 Major depressive affective disorder, single episode, severe
- 296.25 Major depressive affective disorder, single episode, in partial or unspecified remission
- 296.26 Major depressive affective disorder, single episode, in full remission

Non-specific code 296.3 Major depressive disorder recurrent episode

- 296.30 Major depressive affective disorder, recurrent episode, unspecified

- 296.31 Major depressive affective disorder, recurrent episode, mild
- 296.32 Major depressive affective disorder, recurrent episode, moderate
- 296.33 Major depressive affective disorder, recurrent episode, severe, w/o mention of psychotic behavior
- 296.34 Major depressive affective disorder, recurrent episode, severe, specified as with psychotic behavior
- 296.35 Major depressive affective disorder, recurrent episode, in partial or unspecified remission
- 296.36 Major depressive affective disorder, recurrent episode, in full remission

Load the dataset

The data/study-population.csv file contains the results of a query on the MIMIC-III database that extracts patient information along with a one-hot encoding of ICD-9 CM diagnoses for Diabetes Mellitus Type II (DMII) and Major Depressive Disorder (MDD).

```
library(tidyr)
library(dplyr)

set.seed(123)

POP_CSV <- '../data/study-population.csv'

pop <- population <- read.csv(POP_CSV) %>%
  replace_na(list(dmii= 0, mdd = 0)) %>%
  mutate_all(na_if, '')

pos <- positive <- list(
  mdd = filter(pop, dmii == 0, mdd == 1),
  dmii = filter(pop, dmii == 1, mdd == 0),
  both = filter(pop, dmii == 1, mdd == 1)
)

neg <- negative <- lapply(pos, function(sub) {
  pop %>%
    filter(dmii == 0, mdd == 0) %>%
    sample_n(size=nrow(sub))
}) %>% setNames(names(pos))
```

Table 1: A sample of the study population (N = 46520).

subject_id	gender	dob	dod	expire_flag	dm_icd9	dmii	dd_icd9	mdd
18	M	2116-11-29 00:00:00	NA	0	NA	0	29633	1
22	F	2131-05-07 00:00:00	NA	0	NA	0	29620	1
1899	F	2062-01-20 00:00:00	2118-09-06 00:00:00	1	25061	1	29620	1
2984	F	2127-09-02 00:00:00	NA	0	25061	1	29620	1
6816	M	2120-09-11 00:00:00	NA	0	NA	0	NA	0
13766	M	2111-05-24 00:00:00	NA	0	NA	0	NA	0

Table 2: Subsample size by diagnostic subcategory (DMII, MDD, or both).

	DMII(+)/MDD(+)	DMII(+)/MDD(-)	DMII(-)/MDD(+)
Size (N)	19	979	264