

Assessing Factors Associated with Illness Severity for Coccidioidomycosis Hospitalizations in Texas, 2016-2022

Heather Mayfield, MS, Vanora Davila, MPH

Background

Coccidioidomycosis, commonly known as Valley fever, is a disease caused by a soil-dwelling fungus endemic to the southwestern United States. Symptoms often range in severity and can result in complications. Our study investigated factors associated with illness severity, including demographics and comorbid conditions, among patients seeking inpatient care for coccidioidomycosis in Texas.

Methods

Study Population

Using Texas Health Care Information Collection inpatient records, we identified 485 hospital discharges between 2016-2022 with the following criteria:

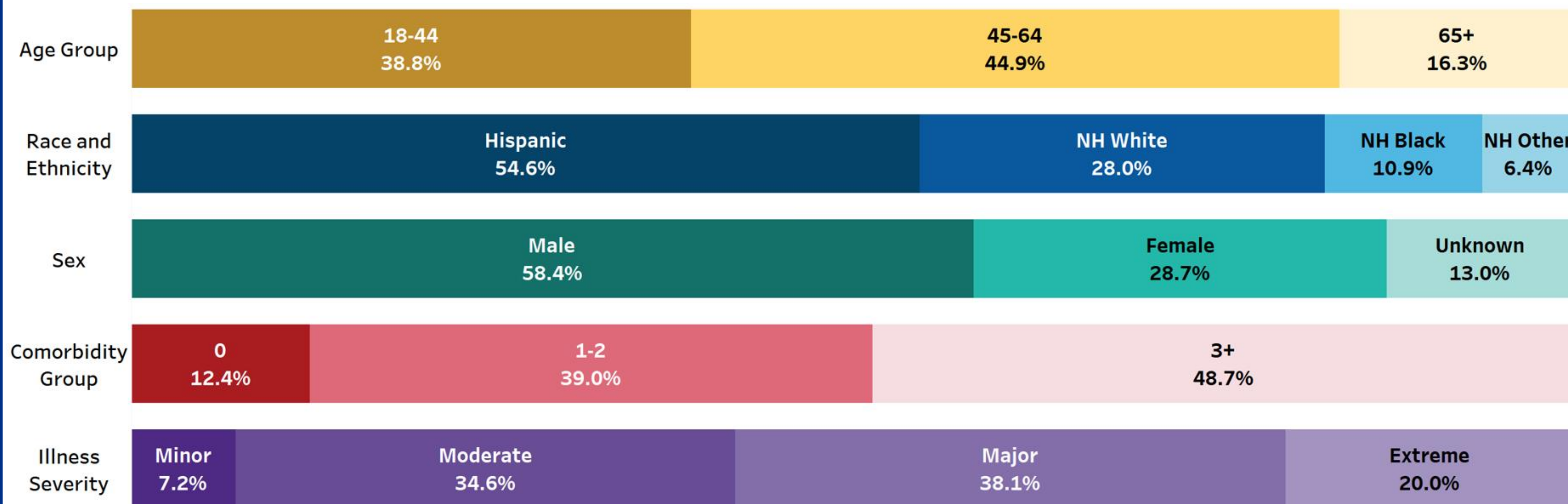
- Principal diagnosis International Classification of Diseases, 10th Revision, Clinical Modification (ICD-10-CM) code Coccidioidomycosis (B38)
- 18 years of age or older

Statistical Methods

We used a modified version of the Elixhauser Comorbidity Index Refined for ICD-10-CM¹ to identify 38 different comorbid conditions based on secondary diagnoses present on admission in the patient record.

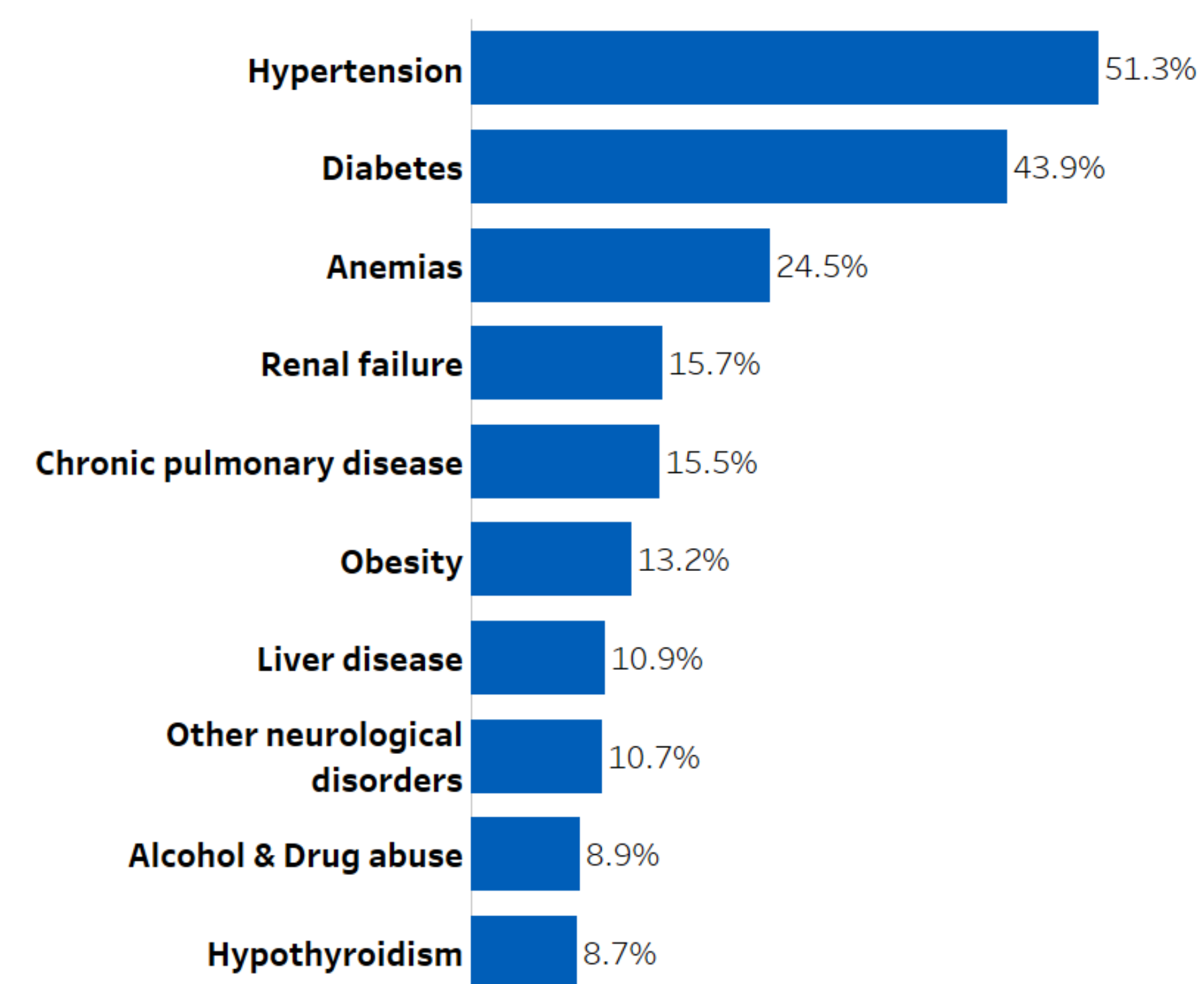
We assessed sociodemographic factors associated with four levels of illness severity recorded for the patient using ordinal logistic regression.

Figure 1. Percentage* of demographics in study population



*Due to rounding, categories may not add to 100

Figure 2. Top Ten Comorbid Conditions Present on Admission



Diabetes includes: diabetes due to underlying condition (E08), drug or chemical induced diabetes (E09), type 1 (E10), type 2 (E11), diabetes in pregnancy, childbirth, and the puerperium (O24), and other specified forms of diabetes (E13)
 "Other neurological disorder" includes: hydrocephalus, encephalopathy, cerebral edema, narcolepsy with and without cataplexy, central pain syndrome, compression of the brain, delirium, multiple sclerosis, and unspecified disorders of the brain

Table 1. Comparison of Odds Ratios by Demographic Factors

Demographic	Odds Ratio	95% Confidence Limits	
Sex			
Male	Ref	Ref	Ref
Female	0.67 [†]	0.45	0.98
Age Group			
18-44 years	2.41 [†]	1.59	3.66
45-64 years	Ref	Ref	Ref
65+ years	1.02	0.62	1.69
Comorbidity Group			
0 comorbidities	Ref	Ref	Ref
1-2 comorbidities	6.51 [†]	3.46	12.18
3+ comorbidities	17.66 [†]	9.16	34.04

[†] Denotes significance at the 0.05 level

Results

Overall, more than half of the study sample were male (58.4%) and Hispanic (54.6%). The largest age group in the study sample was 45-64 years old (44.9%) and almost half had 3 or more comorbidities present on admission (48.7%). Most of the study sample had an illness severity score of Moderate (34.6%), Major (38.1%) or Extreme (20.0%).

The most common comorbid conditions were hypertension (51.3%), diabetes (43.9%), and anemias due to nutritional deficiencies (24.5%).

Compared to those with no comorbidities, those with 1-2 or 3+ were more likely to have a higher illness severity score. Those aged 18-44 years were more likely to have a higher illness severity score compared to those 45-64 years old. Females were 33% less likely than males to have a higher illness severity score.

Conclusion

Our results suggest that age, sex, and comorbidity group were associated with illness severity. Findings highlight the importance of early diagnosis and treatment of coccidioidomycosis among varied sociodemographic groups, especially those with multiple comorbidities.

References:

1. Elixhauser Comorbidity Software Refined for ICD-10-CM. https://hcup-us.ahrq.gov/toolssoftware/comorbidityicd10/comorbidity_icd10.jsp
2. Williams SL, Chiller T. Update on the Epidemiology, Diagnosis, and Treatment of Coccidioidomycosis. *J Fungi (Basel)*. 2022;8(7):666. doi:10.3390/jof8070666
3. Peterson C, Chu V, Lovelace J, Almekdash MH, Lacy M. Coccidioidomycosis Cases at a Regional Referral Center, West Texas, USA, 2013–2019. *Emerg Infect Dis*. 2022;28(4):848-851. doi:10.3201/eid2804.211912