

Sex Differences in Hospitalized Diabetic Foot Ulcer Burden and Severity: A Nationally Representative Analysis

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Introduction

- Diabetic foot ulcers (DFU) are a major cause of hospitalization, morbidity, and cost.
- Men are overrepresented among DFU hospitalizations, though reasons remain unclear.
- Prior studies are limited by referral and single-center bias.
- We aimed to evaluate sex differences in DFU burden and severity using national data.

Methods

- Retrospective study using 2016-2022 National Inpatient Sample (NIS).
- Adult DFU hospitalizations identified using ICD-10 codes.
- Survey-weighted analyses for national estimates.
- Multivariate logistic regression for variables associated with male or female sex.

Results

- **Burden of DFU Hospitalizations:**
 - 2.6 million hospitalizations.
 - 68.5% occurred in male inpatients.
 - DFU more common in male diabetics (7.1% vs. 3.8%).
- **Disease Severity at Presentation:**
 - Men are more likely to present with:
 - Osteomyelitis.

Figure 1. Adjusted Associations with 30-Day Readmission for Diabetic Foot Ulcer

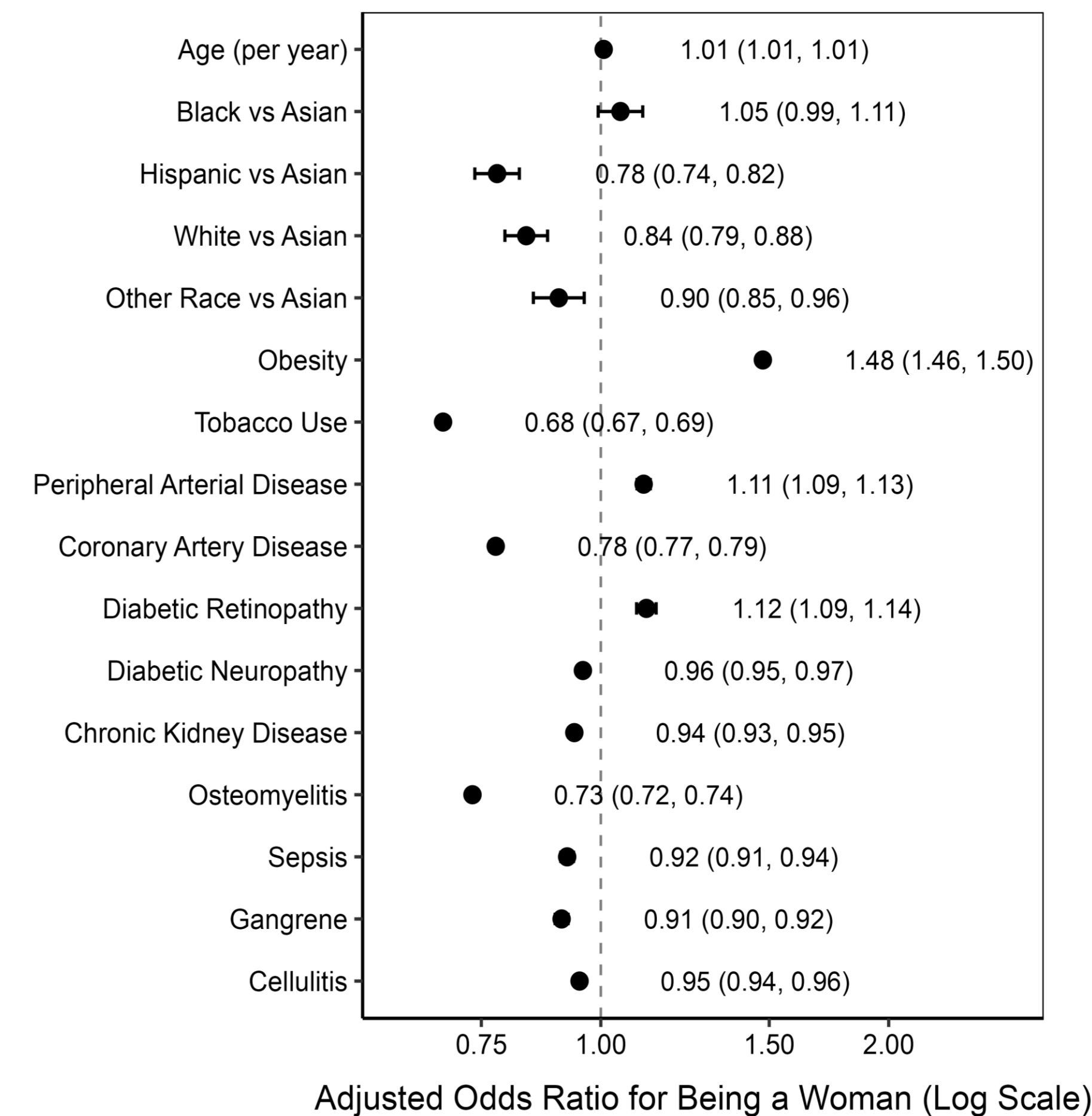


Figure 2. Comparison of Index and Readmission Hospitalizations for Diabetic Foot Ulcer.

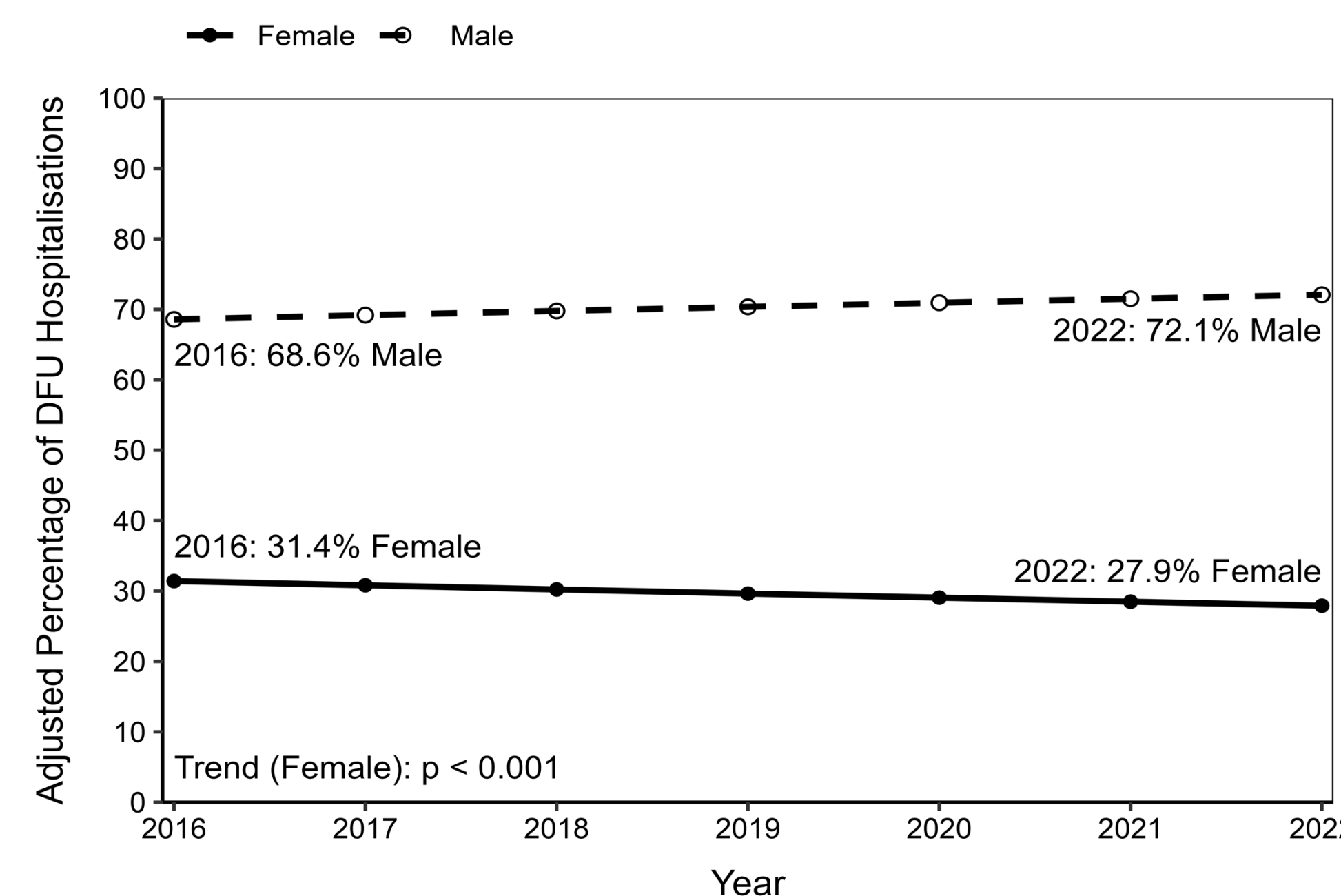


Table 1. Descriptive Characteristics of Index Diabetic Foot Ulcer Hospitalizations.

Variable	Overall	Women	Men	p-value
n	2,588,159	815,150	1,772,749	N/A
Age	62.2 (62.1, 62.2) [13.3]	63.0 (62.9, 63.1) [14.0]	61.8 (61.7, 61.8) [12.9]	<0.001
Insurance				<0.001
- Public	74.9 (74.7, 75.1)	80.2 (79.9, 80.4)	72.5 (72.2, 72.7)	
- Private	18.4 (18.2, 18.6)	15.1 (14.9, 15.4)	19.9 (19.7, 20.1)	
- Uninsured	4.3 (4.2, 4.4)	3.3 (3.2, 3.4)	4.7 (4.6, 4.9)	
- Other	2.4 (2.4, 2.5)	1.4 (1.3, 1.4)	2.9 (2.8, 3.0)	
ZIP Income Quartile				<0.001
- 1 st	35.7 (35.2, 36.1)	38.1 (37.7, 38.6)	34.5 (34.1, 34.9)	
- 2 nd	27.3 (27.0, 27.5)	27.4 (27.1, 27.8)	27.2 (26.9, 27.5)	
- 3 rd	22.1 (21.9, 22.4)	21.1 (20.8, 21.5)	22.6 (22.3, 22.9)	
- 4 th	15.0 (14.6, 15.3)	13.3 (13.0, 13.6)	15.7 (15.4, 16.1)	
Tobacco Use	37.0 (36.8, 37.3)	31.1 (30.8, 31.4)	39.8 (39.5, 40.0)	<0.001
Alcohol Use	3.0 (3.0, 3.1)	1.0 (0.9, 1.0)	4.0 (3.9, 4.0)	<0.001
Osteomyelitis	42.0 (41.9, 42.2)	36.4 (36.1, 36.6)	44.7 (44.4, 44.9)	<0.001
Gangrene	22.3 (22.1, 22.5)	20.7 (20.5, 21.0)	23.0 (22.9, 23.2)	<0.001
Prior Amputation	15.4 (15.3, 15.6)	12.3 (12.1, 12.5)	16.9 (16.7, 17.0)	<0.001
Amputation During Encounter	26.6 (26.5, 26.8)	22.1 (21.9, 22.4)	28.7 (28.5, 28.9)	<0.001
Obesity	28.8 (28.6, 29.1)	33.9 (33.6, 34.2)	26.5 (26.3, 26.8)	<0.001
Hypothyroidism	11.2 (11.1, 11.3)	17.6 (17.3, 17.8)	8.3 (8.2, 8.4)	<0.001
Peripheral Neuropathy	2.2 (2.1, 2.2)	2.2 (2.1, 2.3)	2.1 (2.1, 2.2)	0.317
Retinopathy	8.2 (8.0, 8.3)	8.6 (8.4, 8.8)	7.9 (7.8, 8.1)	<0.001
Depression	13.8 (13.7, 13.9)	18.4 (18.1, 18.6)	11.7 (11.6, 11.8)	<0.001
Anxiety	10.4 (10.3, 10.5)	15.1 (14.9, 15.3)	8.2 (8.1, 8.4)	<0.001
COPD/Asthma	19.0 (18.9, 19.1)	23.7 (23.4, 23.9)	16.9 (16.7, 17.0)	<0.001
Coronary Artery Disease	36.5 (36.3, 36.7)	34.0 (33.7, 34.3)	37.7 (37.5, 37.9)	<0.001
Peripheral Arterial Disease	20.1 (19.9, 20.3)	20.9 (20.6, 21.2)	19.8 (19.5, 20.0)	<0.001
Atrial Fibrillation	18.8 (18.6, 18.9)	16.5 (16.3, 16.7)	19.9 (19.7, 20.0)	<0.001
Length of Stay (days)	8.0 (7.9, 8.0) [8.3]	8.0 (8.0, 8.1) [8.5]	7.9 (7.9, 8.0) [8.3]	<0.001
Total Healthcare Charge (2022 USD)	95,618 (94,718, 96,518) [121,755]	94,633 (93,618, 95,649) [121,488]	96,071 (95,132, 97,010) [121,875]	<0.001

Results (cont.)

- Gangrene.
- Prior amputation.
- Male patients had higher rates of amputation during hospitalization.
- **Comorbidity Profiles:**
 - Women were more likely to have:
 - Obesity.
 - Depression.
 - Anxiety.
 - Cardiometabolic comorbidities were otherwise similar.
- **Adjusted Findings:**
 - Limb-threatening markers remained less common in women
 - Obesity remained more common in women.

Conclusions

- DFUs disproportionately affect male diabetic inpatients.
- Male inpatients present with more advanced limb-threatening disease.
- Women show distinct metabolic and psychosocial profiles.
- Differences in male and female inpatients with DFU reflect both biological and structural factors.
- The findings support sex-informed prevention and earlier intervention.