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Identifying Multiple Risk Factors of Hypertension for Reducing the Prevalence of Peripheral Arterial Disease in Rural Central Appalachia

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IDENTIFYING MULTIPLE RISK FACTORS OF HYPERTENSION FOR REDUCING THE PREVALENCE OF PERIPHERAL ARTERIAL DISEASE IN RURAL CENTRAL APPALACHIA FROM 2008 TO 2018

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BACKGROUND

- Hypertension occurs when there is persistent increase in the pressure of blood vessels in the body
- About 1 in 3 adults in the United States have hypertension
- Hypertension is a major risk factor for Peripheral Artery Disease (PAD).
- PAD is a narrowing of the peripheral arteries in legs, stomach, arms and head regions of the body except the heart.
- Hypertension affects 32.2% of the US population while 38.7% of Tennesseans are diagnosed with hypertension
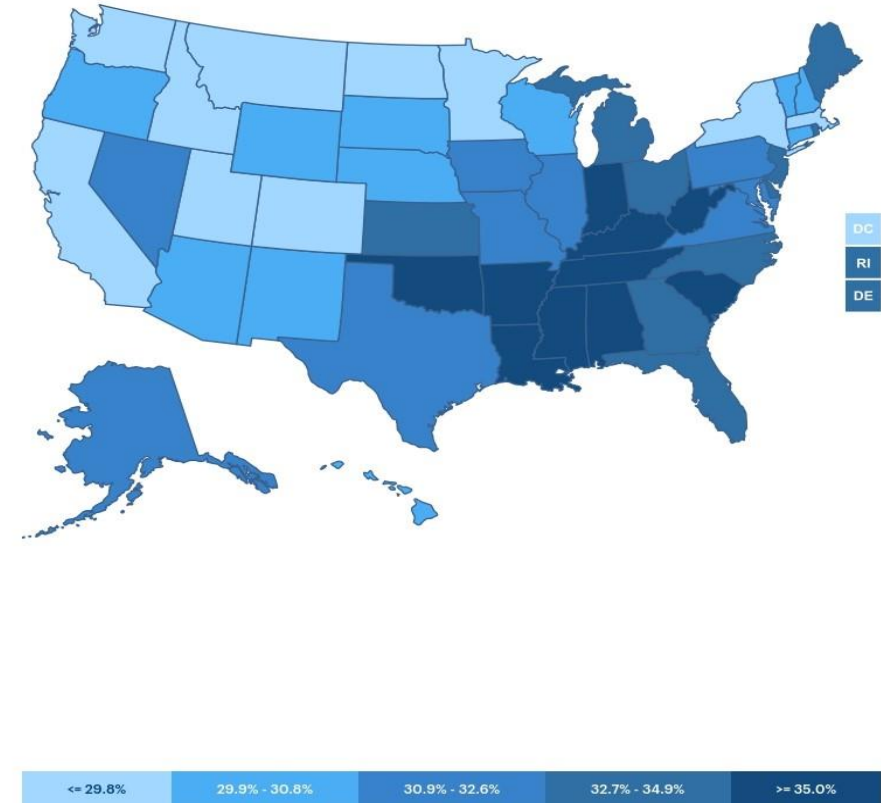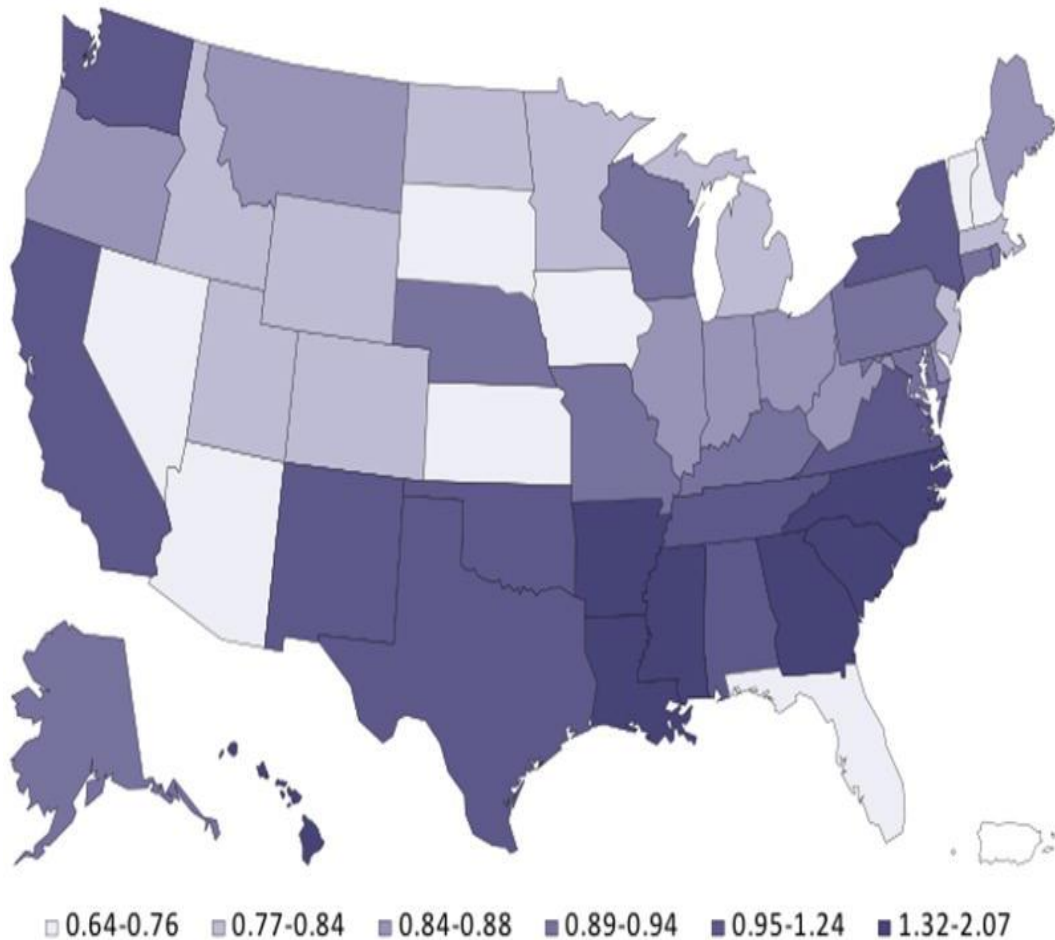
PAD · Peripheral Artery Disease

affects approximately

8.5 million people in the U.S.

Maps showing the distribution of PAD and hypertension in the United States
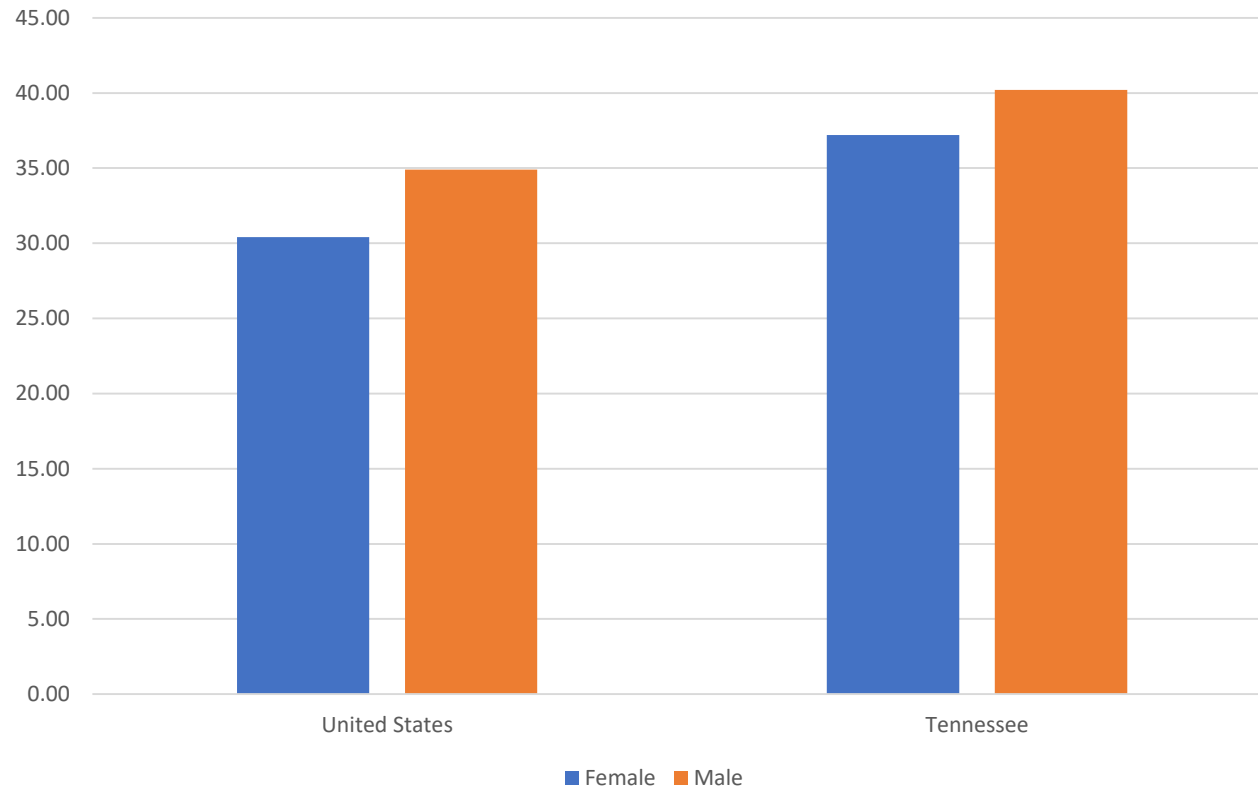

0.64-0.76   0.77-0.84   0.84-0.88   0.89-0.94   0.95-1.24   1.32-2.07

<= 29.8%   29.9% - 30.8%   30.9% - 32.6%   32.7% - 34.9%   >= 35.0%

Bar charts showing comparison of hypertension by gender and age in the US and Tennessee
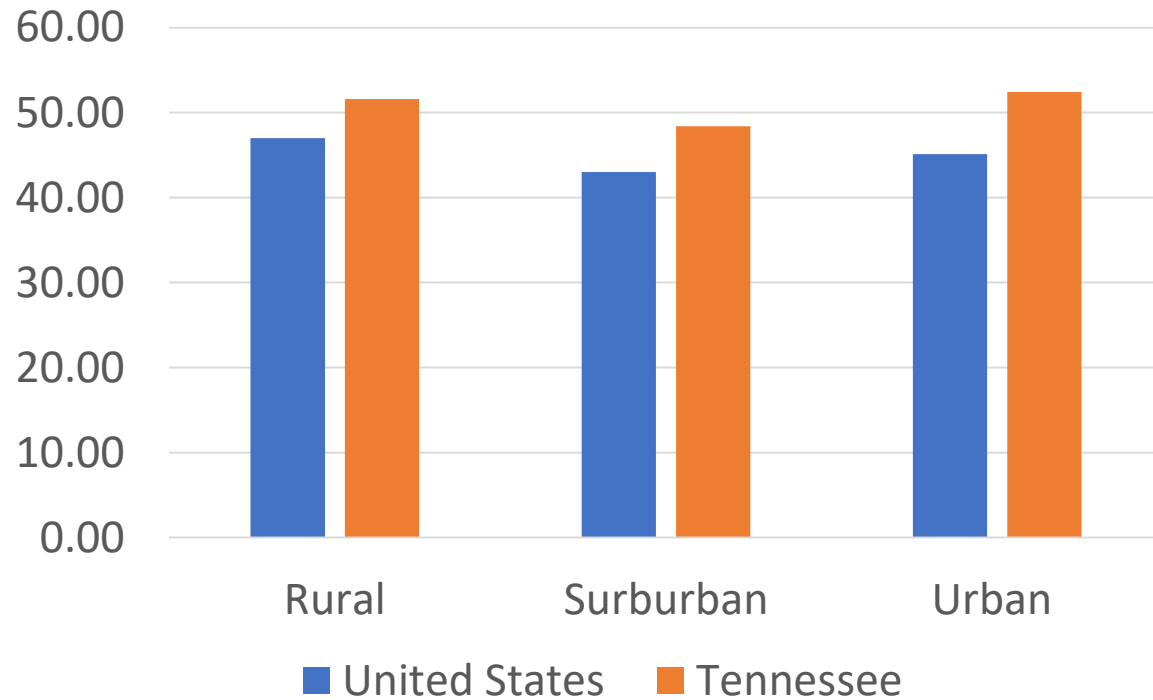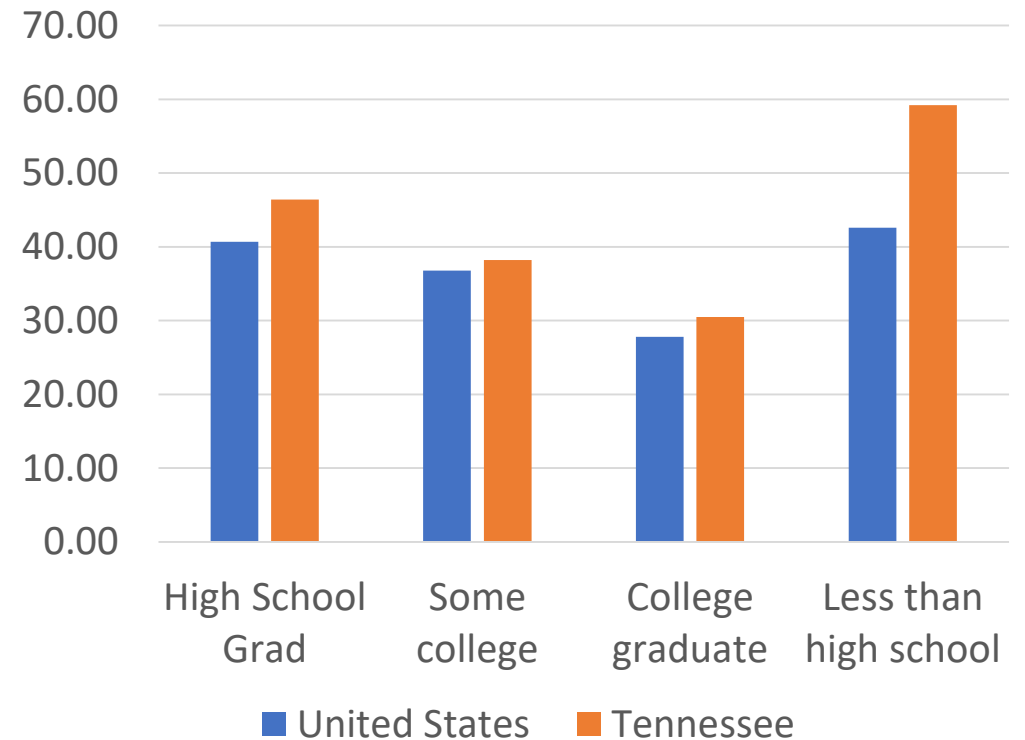
Bar charts showing comparison of hypertension by urbanicity and education in the US and Tennessee

Prevalence of hypertension by urbanicity in the US and TN

Prevalence of hypertension by education level in the US and TN

OBJECTIVE

To examine the multiple risk factors of hypertension in male and female PAD patients in Central Appalachia.

METHOD

- The data of 13,455 patients with PAD was extracted from Electronic Medical Records (EMR) system using ICD- 9 and ICD-10 codes.

- The outcome variable of the study was hypertension in PAD patients.

- Using descriptive statistics with the Statistical Package for Social Sciences (SPSS) version 24, we performed multivariable logistic regression to assess the association between risk factors of hypertension in male and female PAD patients

Results

Bar Chart showing prevalence of hypertension in PAD by gender
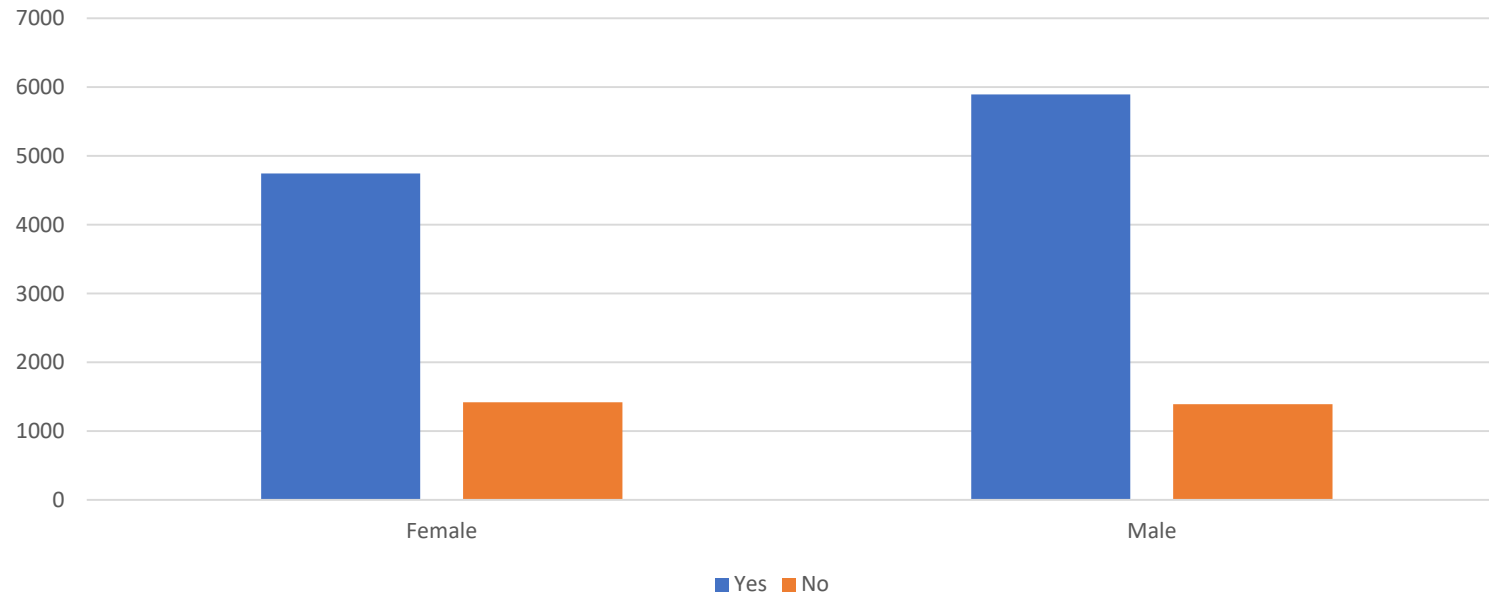
Results

Bar chart showing prevalence of hypertension in PAD patients with other comorbidities

Results
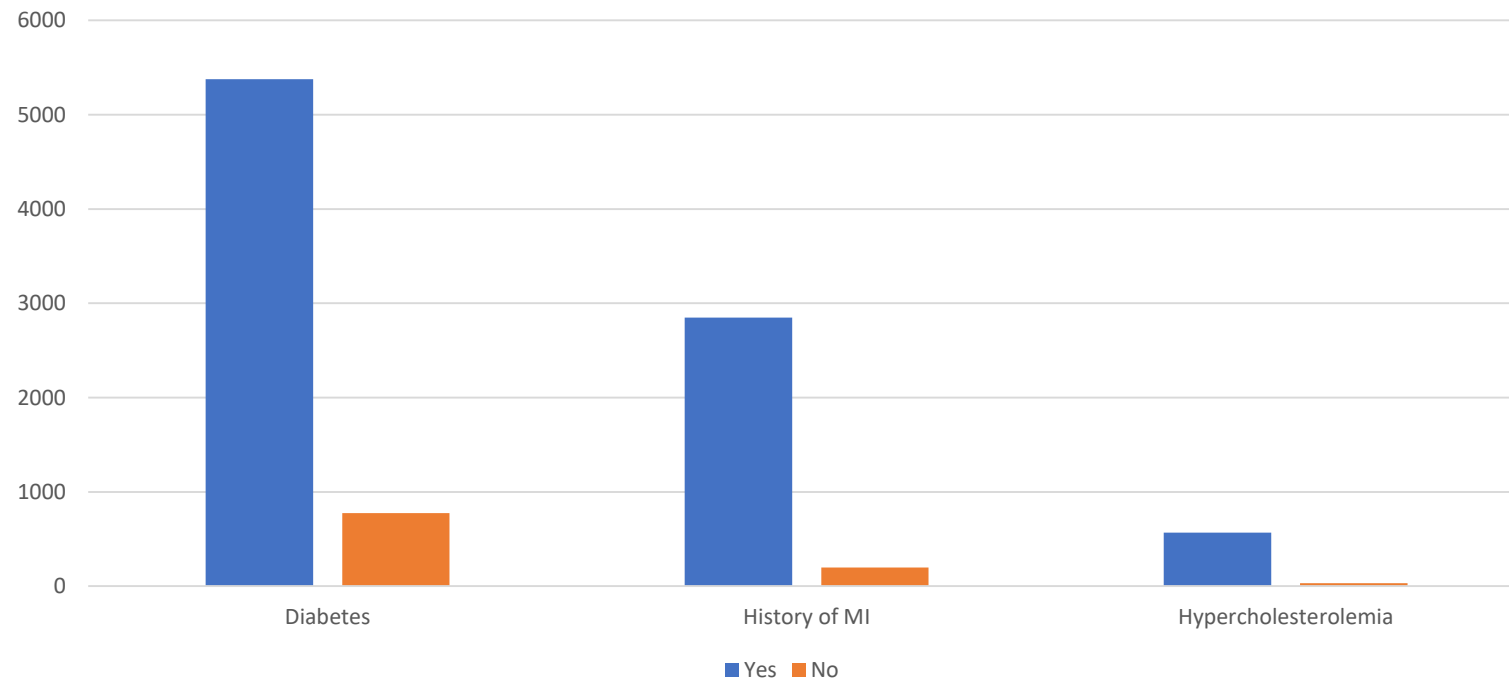
Risk Factors	P-value	Mean Difference	Standard Error	95% C.I
Age	0.00	-4.09	0.27	-4.62 to -3.56
BMI	0.01	-4.71	1.79	-8.22 to -1.21
Hypercholesterolemia	0.00	-0.04	0.00	-0.05 to -0.04
Smoking Status	0.00	0.28	0.02	0.25 to 0.31
DM	0.00	-0.23	0.01	-0.25 to -0.21
History of MI	0.00	-0.20	0.01	-0.21 to -0.18

Table 1: Independent T-test for risk factors of hypertension in PAD patients in Central Appalachia

Results

Risk Factors /	Parameters	P-value	Odds Ratio (OR)	95% C.I
Male	MI	0.00	3.86	1.61 to 9.21
	DM	0.00	2.63	1.43 to 4.83
	BMI	0.00	1.12	1.06 to 1.18
Female	Significant other	0.01	0.09	0.02 to 0.61
	MI	0.00	5.41	1.80 to 16.21
	DM	0.00	3.2	1.60 to 6.41
	BMI	0.00	1.06	1.03 to 1.10
History of MI	Significant other	0.02	0.37	0.16 to 0.85
	DM	0.00	2.8	1.75 to 4.49
	BMI	0.00	1.08	1.03 to 1.13
Diabetes Mellitus (DM)	Female	0.03	0.59	0.36 to 0.95
	Significant other	0.01	0.29	0.12 to 0.73
	MI	0.00	4.5	1.99 to 10.22

Table 2: Logistic regression showing p-values and O.R for risk factors of hypertension in PAD patients in Central Appalachia

Discussion

- The odds of hypertension in PAD patients is increased in the presence of diabetes and history of MI in both genders.

- While being a female and in a relationship with a significant other, conferred protection in the development of hypertension in PAD patients (in the presence of comorbidities)

Conclusion

- Controlling diabetes and myocardial infarction will have the greatest impact in reducing the rate of hypertension

- Therefore, leading to decreased morbidity and mortality in patients with PAD

- However, further research needs to be done to confirm the protective roles of being in a relationship with a significant other and gender type on developing hypertension (in the presence of other comorbidities)

Acknowledgement

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