HYPERTENSIVE DISORDERS OF PREGNANCY AND THE SOCIAL ENVIRONMENT: WHICH ADDITIONAL RISK FACTORS EMERGE IN A LOW SOCIOECONOMIC STATUS POPULATIONS?

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DISCLOSURE

I have no actual or potential conflict of interest in relation to this program/presentation.

I have no financial interests or relationships to disclose.

BACKGROUND

Low SES has emerged in the literature as a risk factor for development of pre-eclampsia.

In the 2018 guidelines for prophylactic use of aspirin in prevention of pre-eclampsia, the American College of Obstetricians and Gynecologists (ACOG) included low SES as a moderate risk factor.[1]

BACKGROUND

How different organizations define SES:

- Educational level
- Income
- Occupation - membership in “manual” vs “non-manual” social classes
- Eligibility for government aid.
- Inadequate prenatal care
- Iron deficiency/ Poor nutrition
- Stress in the living environment – housing insecurity, frequency of unhealthy behaviors, unintended pregnancy, neighborhood hazards, noise pollution, local crime rates
- Transfers of care providers
- Mental illness

BACKGROUND

Race and ethnicity?

Contradictory results regarding pre-eclampsia risk and SES, particularly with regards to race and ethnicity.

- In Massachusetts a study compared gHTN between Hispanic women and non-Hispanic white women

-→ No significant difference in the number of prenatal visits, public aid, marital status, or years of education between whom who developed gHTN and those who did not.

- Other studies have found that pre-eclampsia risk remains elevated in black women of higher SES and chronic stress

BACKGROUND

Pre-eclampsia risk factors	
History of HDP in previous pregnancy	Nulliparity
Multiple order births (twins, triplets, etc)	BMI >30
Chronic hypertension	Black race
Diabetes	Age >35
Kidney disease	Autoimmune disease

Aspect of low SES	Study variable
Poor nutrition	-Hemoglobin at entry to care
Inadequate prenatal care	-Gestational age at entry to care -Number of prenatal visits
Unhealthy lifestyle	-Substance use
Life stressors	-Pre-existing medical and psychiatric illnesses not listed as a pre-eclampsia risk factor in Table 2 - Marital status -Distance from patient's home to hospital -Number of medical transitions of care -Social problems if noted in the records (including housing insecurity, domestic violence, DCFS involvement)
Environmental stressors	-Poverty rate in patient's zip code -Crime index in patient's zip code

OBJECTIVE

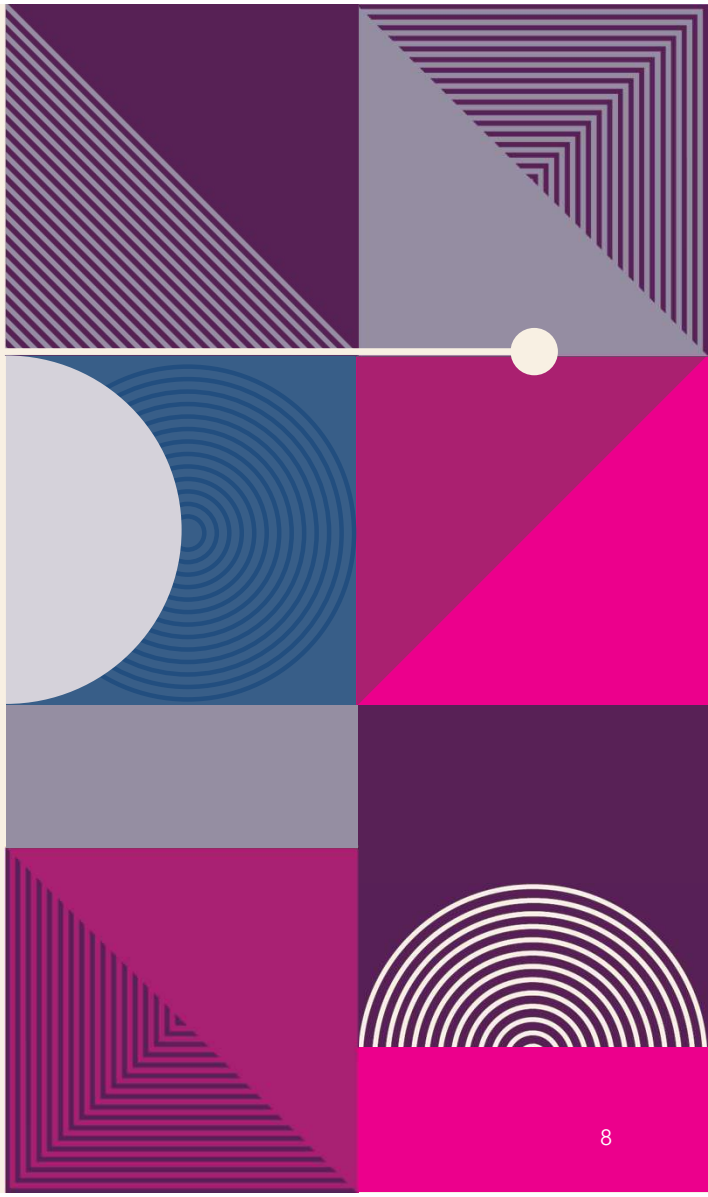
1. Compare presence of social risk factors between low-income patients with hypertensive disorders of pregnancy and low-income patients who do not develop hypertensive disorders of pregnancy.

2. Is there an association between social risk factors and development of hypertensive disorders of pregnancy between racial/ethnic groups.

PROJECT METHODS

The study is a retrospective chart review and case control study.

1. A record of all patients giving birth at AdventHealth Hinsdale Hospital from 2020 to April 2023 (COVID era) was obtained, from physical records in L&D and then further extracted from Cerner.
2. Insurance status was determined, patients with selfpay or Medicaid insurance were selected for further investigation in the study.
3. Inpatient medical records and prenatal records were examined for data of interest to the study, as listed in Table 1 and Table 2.
4. Patient data was linked to the FIN and stored in an excel spreadsheet in an AdventHealth provided, password protected laptop.

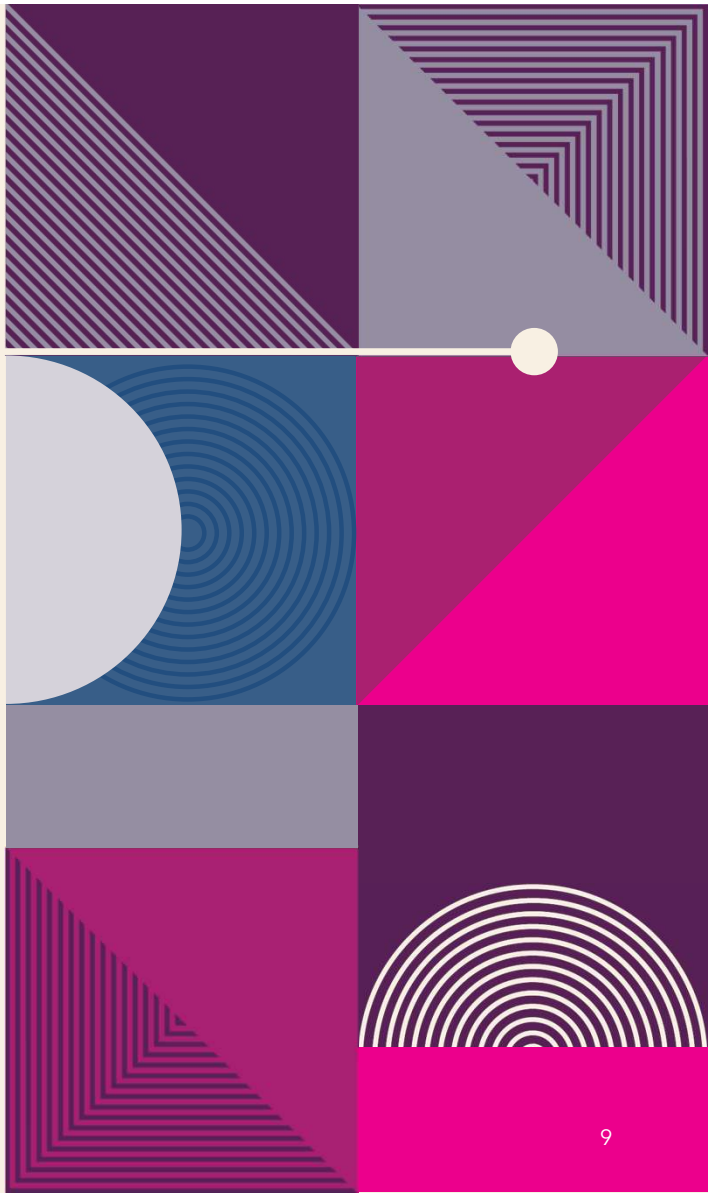


PROJECT METHODS

Inclusion and Exclusion Criteria:

Inclusion Criteria: patients delivering infants at AdventHealth Hinsdale Hospital from 2020 to April 2023 covered by Medicaid insurance or self-pay.

Exclusion criteria: private health insurance coverage or patient using aspirin prophylaxis for pre-eclampsia prophylaxis.



DATA

Cross tab: is used for comparing the Yes/No variables and seeing if there are differences between those with and without hypertensive disorders. With the data collected, there are categories in which the cases are very low and thus the statistics do not work.

Hypertensive disorders * Substance use

Crosstab

Count

		Substance use		
		No	Yes	Total
Hypertensive disorders	No	84	18	102
	Yes	18	1	19
Total		102	19	121

Hypertensive disorders * Marrital Status

Crosstab

Count

		Marrital Status			
		Married	Single	Unknown	Total
Hypertensive disorders	No	44	50	8	102
	Yes	7	11	1	19
Total		51	61	9	121

DATA

Hypertensive disorders * Abuse

Crosstab

Count

		Abuse		
		No	Yes	Total
Hypertensive disorders	No	97	5	102
	Yes	18	1	19
Total		115	6	121

Hypertensive disorders * Housing

Crosstab

Count

		Housing		
		No	Yes	Total
Hypertensive disorders	No	101	1	102
	Yes	18	1	19
Total		119	2	121

DATA

Hypertensive disorders * Race

Crosstab

Count

		Race				
		American Indian or Alaskan Native	Asian	Black	Other	Unknown
Hypertensive disorders	No	1	2	14	38	1
	Yes	0	0	5	6	0
Total		1	2	19	44	1

Crosstab

Count

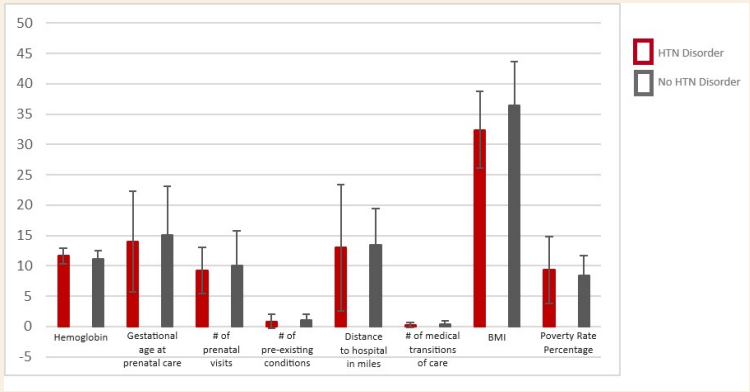
		Race	
		White	Total
Hypertensive disorders	No	46	102
	Yes	8	19
Total		54	121

DATA

T-test was used to compare means between the two groups for variables where an average can be calculated for.

BMI shows a significant difference as well as the number of medical transitions.

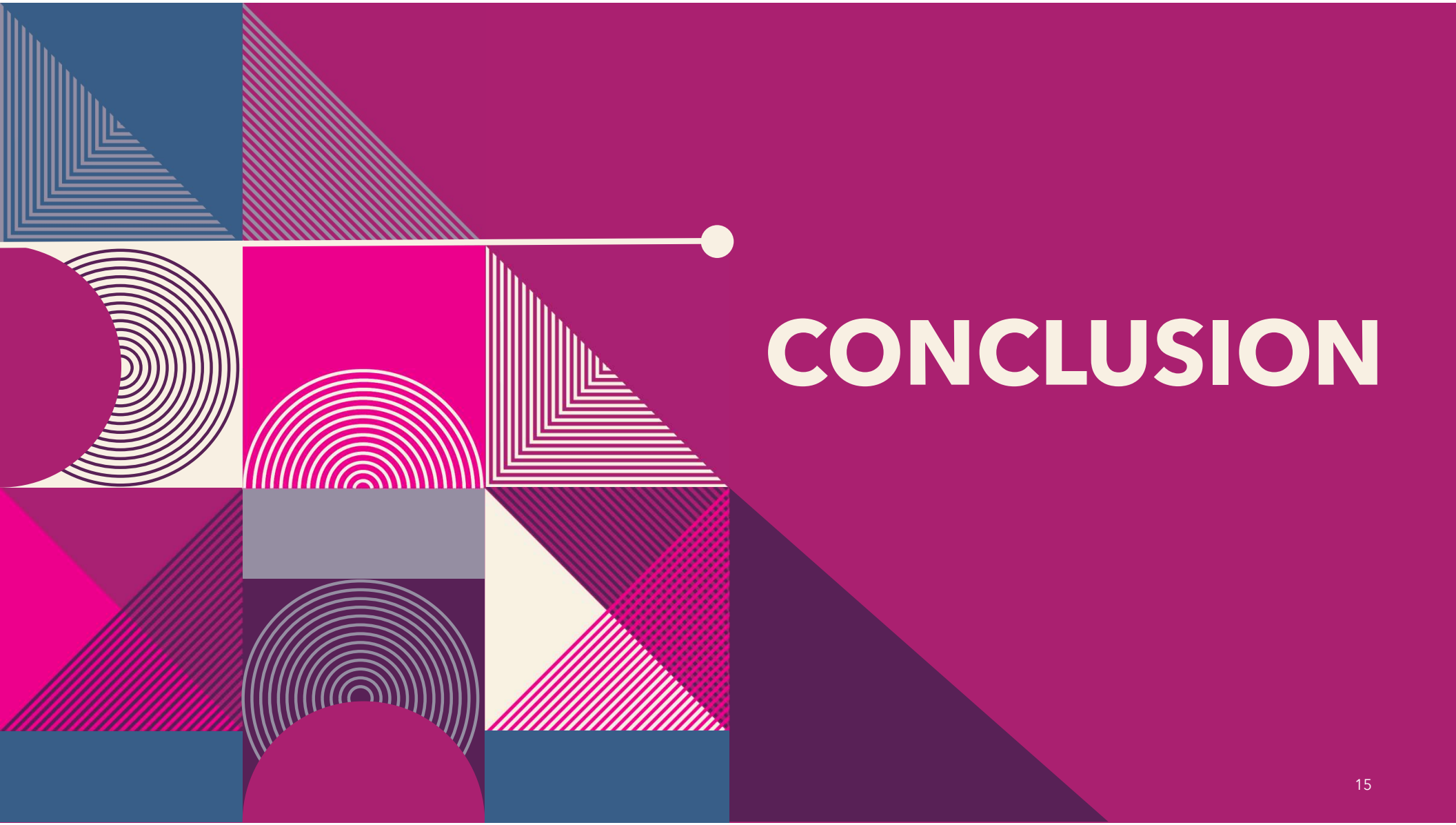
	Hypertensive disorders	N	Mean	Std. Deviation
Hemoglobin	No	102	11.630	1.3040
	Yes	19	11.174	1.2879
Gestational age at prenatal care	No	100	14.002	8.3534
	Yes	19	15.047	8.0941
# prenatal visits	No	102	9.26	3.815
	Yes	19	10.11	5.587
#of pre-existing conditions	No	102	.85	1.138
	Yes	19	1.00	1.000
Distance to hospital in miles	No	102	13.002	10.4072
	Yes	19	13.432	5.9377
# Medical Transitions of Care	No	100	.21	.409
	Yes	19	.42	.507
BMI	No	101	32.3861	6.31995
	Yes	19	36.5047	7.19506
Poverty Rate Percentage	No	102	9.310	5.5480
	Yes	19	8.453	3.2234



DATA

Correlation with HTN status was significant with BMI. Low correlation at 0.219 however it is statistically significant.

	HTN Disorder	Hemoglobin	Gestational age at prenatal care	# of prenatal visits	Substance use	Pre-existing condition	GDM	# of pre-existing conditions	Distance to hospital in miles	# of medical transitions of care	Abuse	Housing	Poverty Rate Percentage	BMI	Nulliparity	Multiple Gestation	Age
HTN Disorders	1	-0.119	0.07	0.025	-0.124	0.141	0.162	0.099	0.103	0.18	0.006	0.122	0.002	0.219	0.144	0.174	-0.027
Hemoglobin	-0.119	1	0.034	0.038	-0.053	-0.092	0.065	-0.09	-0.012	0.135	-0.207	0.005	-0.121	0.002	0.148	-0.166	-0.011
Gestational age at prenatal care	0.07	0.034	1	-0.617	0.067	-0.094	-0.081	-0.111	-0.044	0.334	0.062	0.09	0.002	-0.081	0.137	-0.053	-0.068
# of prenatal visits	0.025	0.038	-0.617	1	-0.076	0.075	0.057	0.085	0.033	-0.353	0.002	0.001	0.028	0.234	-0.1	-0.072	-0.075
Substance use	-0.124	-0.053	0.067	-0.076	1	0.005	-0.018	0.004	-0.131	-0.87	0.111	-0.056	-0.067	0.028	0.093	0.047	0.032
Pre-existing condition	0.141	-0.092	-0.094	0.075	0.005	1	0.44	0.868	0.03	0.065	0.143	0.124	-0.029	0.108	0.03	0.085	-0.105
GDM	0.162	0.065	-0.081	0.057	-0.018	0.44	1	0.404	-0.058	0.045	-0.004	-0.059	-0.015	0.196	-0.085	-0.085	0.067
# of pre-existing conditions	0.099	-0.092	-0.111	0.085	0.004	0.868	0.404	1	0.045	0.059	0.323	0.15	-0.038	0.077	-0.104	0.025	-0.113
Distance to hospital in miles	0.103	-0.012	-0.044	0.033	-0.131	0.03	-0.058	0.045	1	-0.062	0.031	0.126	0.132	-0.015	-0.025	0.154	-0.152
# of medical transitions of care	0.18	0.135	0.334	-0.353	-0.087	0.065	0.045	0.059	-0.062	1	-0.041	0.078	0.086	0.108	0.086	0.22	-0.006
Abuse	0.006	-0.207	0.062	0.002	0.111	0.143	-0.004	0.323	0.031	-0.041	1	0.269	-0.027	0.002	-0.14	-0.042	-0.108
Housing	0.122	0.005	0.09	0.001	-0.056	0.124	-0.059	0.15	0.126	0.078	0.269	1	0.01	0.135	0.066	-0.024	-0.061
Poverty Rate Percentage	0.002	-0.121	0.022	0.028	-0.067	-0.029	-0.015	-0.038	0.132	0.086	-0.027	0.01	1	0.192	-0.115	0.14	-0.039
BMI	0.219	0.002	-0.081	0.234	0.028	0.108	0.196	0.077	-0.015	0.108	0.002	0.135	0.192	1	-0.005	0.091	0.069
Nulliparity	0.144	0.148	0.137	-0.1	0.093	0.03	-0.085	-0.104	-0.025	0.086	-0.14	0.066	-0.115	-0.005	1	0.094	-0.241
Multiple Gestation	0.174	-0.166	-0.053	-0.072	0.047	0.085	-0.085	0.025	0.154	0.22	-0.042	-0.024	0.14	0.091	0.094	1	-0.087
Age	-0.027	-0.011	-0.068	-0.075	0.032	-0.105	0.067	-0.113	-0.152	-0.006	-0.108	-0.061	-0.039	0.069	-0.241	-0.087	1


CONCLUSION

The primary objective was to compare presence of social risk factors between low-income patients with hypertensive disorders of pregnancy and low-income patients who did not develop hypertensive disorders of pregnancy (HDPs). **The largest social risk factor in those who developed HDPs was BMI as well as an increase in transition of medical care.**

The secondary objective was to determine whether the association between social risk factors and development of HDPs, if any, varies between racial/ethnic groups. **Racial/ethnic groups were not deemed to be an association between social risk factors and development of HDPs in this study.**

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