

**ALCOHOL AFFECTED ADULTS' SELF-REPORTED
HEALTH AND MENTAL HEALTH STATUS:
EVIDENCE OF LONG-TERM EFFECTS FROM A CROSS
SITE STUDY**

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OTIS/MotherToBaby

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CIFASD

Collaborative Initiative on
Fetal Alcohol Spectrum Disorders

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The problem:

- Despite the prevalence of FASD and its life-long course, there is little empirical research about long-term adult health, physical characteristics, neurobehavior or adaptive functioning.
- The Developmental Origins of Health and Disease (DOHoD) hypothesis suggests that fetal programming by PAE should result in vulnerable organisms with increased sensitivity to stress, adverse health and functional outcomes.
- Long-term effects should begin to present themselves by Middle Adulthood.

THE STUDY

- Multisite Collaborative Study (part of the Collaborative Initiative on Fetal Alcohol Spectrum Disorders (CIFASD4))
- Sites include Atlanta, GA and Seattle, WA, with a parallel study in Vancouver, BC.
- Two “Tier” Assessment in Seattle and Atlanta:
 - Tier 1. Demographic and Health Survey, Registry
 - Tier 2. In-Depth Assessment of medical records, physical characteristics, immune function, mental health, cognitive functioning, social/adaptive functioning
- In Vancouver, only Tier 2



PARTICIPANT POOL

In Seattle and Atlanta, individuals were recruited who took part in earlier longitudinal studies at the University of Washington and Emory University.

- Seattle: a total of 475, now age 30 to 74 years, 66% White and 41% female; 37% diagnosed with FAS and 63% non-dysmorphic but affected, classified as having FAE.
- Atlanta: a total of 427, now in late-30s, early 40's, low SES, predominantly African-American and 48% female. Of these, 292 were recruited prenatally from same intercity hospital, 70% are alcohol-exposed.

In Vancouver, individuals aged 22-50 years were recruited through community networks with the Goal 1) 40 people with FAS, pFAS or physical effects of alcohol; 2) 40 alcohol-exposed without physical features; and 3) 40 unexposed controls.

- Tier 1

Adult Health
Survey (N=360)
of chronic
medical
problems in
midlife and
access to health
care.

Health Issues assessed:

- Access to health care
- Sleep
- Vision/Hearing/Dental
- Allergies and Asthma
- Cardiovascular
- GI
- Diabetes
- Autoimmune disorders
- Arthritis
- Seizures
- Depression/Anxiety
- Other Medical problems
- Adverse Childhood Experiences

Questionnaire Development

Structured using the CDC Behavioral Risk Factor Surveillance System Questionnaire (BRFSS) as a model.

1. Selected from Existing BRFSS modules (in public domain).
2. Added modules on Seizures from Neurological Questionnaire.
3. Created modules on vision, hearing and dental health.
4. Created modules on Gastrointestinal and Immunology.

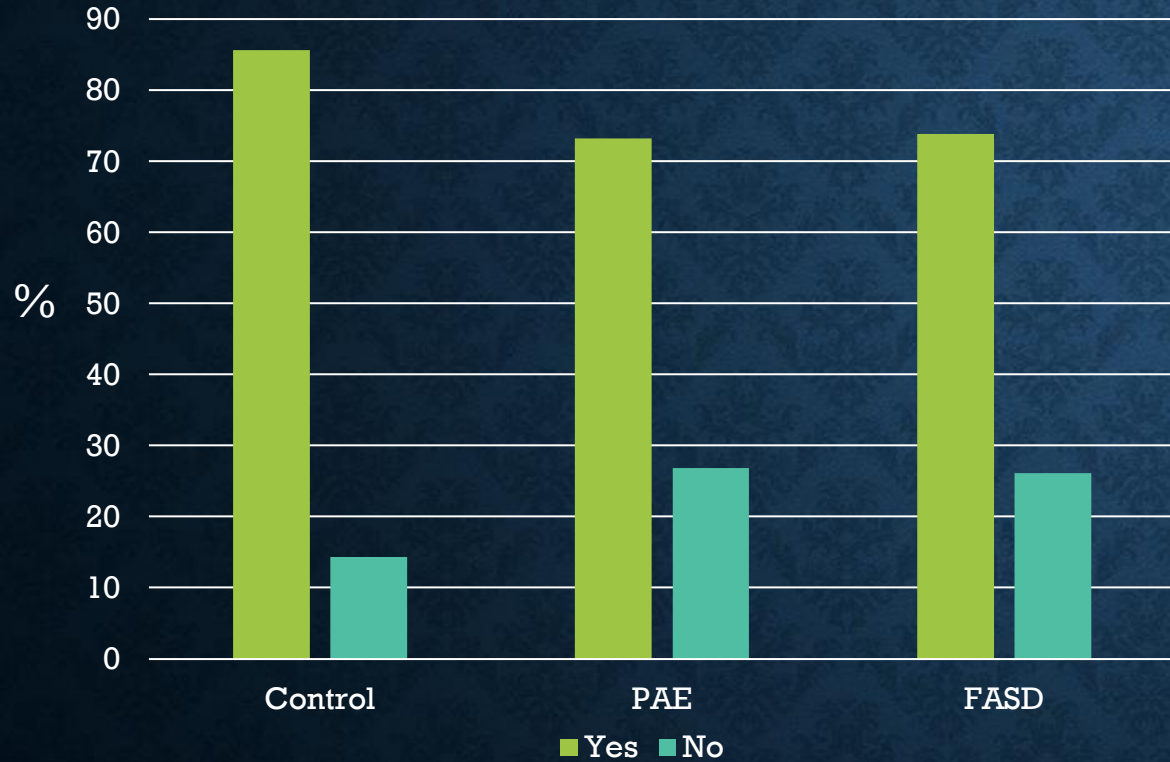
CHARACTERISTICS OF SAMPLE IN ATLANTA AND SEATTLE: DEMOGRAPHICS (N=358)

Characteristic		Contrast (n=136)	Alcohol Exposed (n=128)	FAS(D) (n=94)	Statistic
Tier 1 Age (n=292)		40.2 (7.67)	37.96 (6.54)	38.94 (6.75))	$F_{(2,334)}=3.15, p<.05$
Biological Sex (% male)		38.9%	40.2%	47.3%	$X^2_{(2)}=6.23, NS$
Race* (%) *90% Non Hispanic	White	47.8%	44.1%	40.4%	$X^2=18.78, p=.04$
	African-American	38.2%	29.1%	40.4%	
	Native American	4.4%	13.4%	8.5%	
	Other (Mixed)	5.9%	13.4%	7.4%	
Hollingshead (1975) SES Rank		41.0 (14.98)	30.24(12.57)	25.33 (10.67)	$F_{(2,334)}=41.41, p<.000$
Marital Status	“married”	49.2%	41.9%	25.5%	$X^2_{(12)}=29.6, p<.003$
	“unmarried”	47.1%	58.23%	71.3%	
M # Biological Children		2.36(1.25)	2.58(1.45)	2.29(1.3)	Not sig. different
Household Income	>\$4000/mo	44.1%	15.7%	12.8%	$X^2_{(16)}=62.3, p<.000$
	<\$1000/mo	6.6%	21.3%	31.9%	

Alcohol affected individuals are less often married, have lower SES and lower incomes than Contrast group. Recall that when identified, SES was matched.

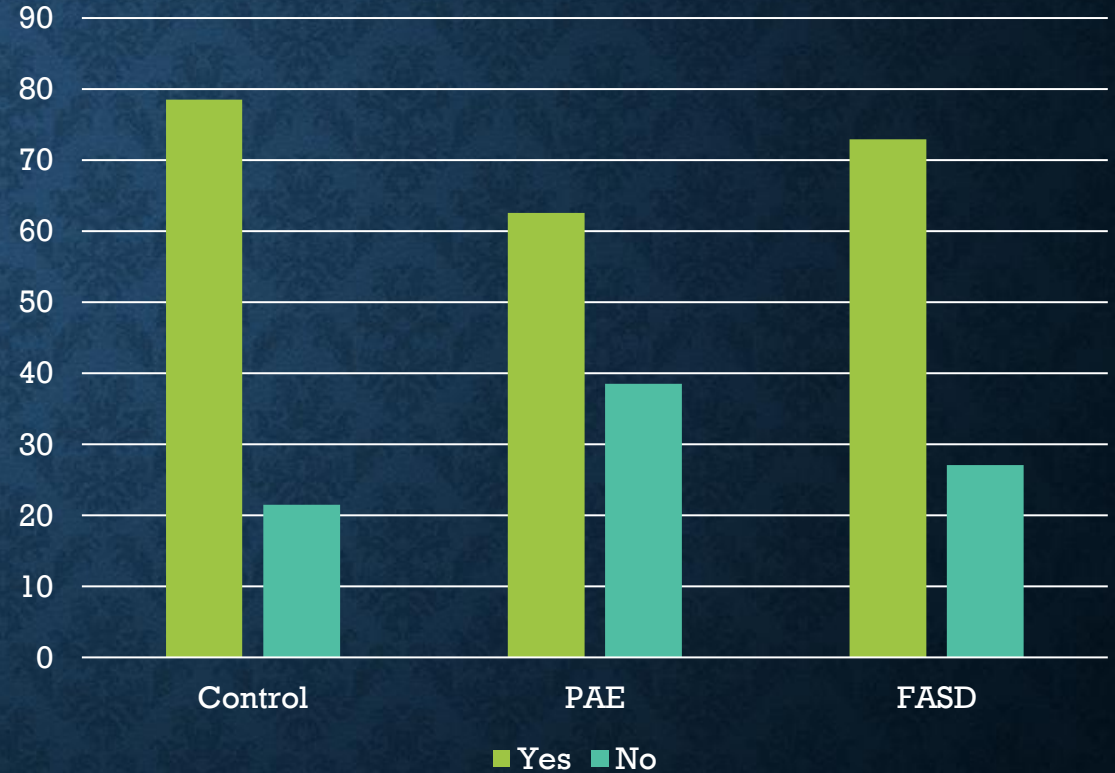
“OVERALL DO YOU THINK OF YOURSELF AS IN GOOD HEALTH?” (N=358)

Physical Health



$\chi^2 = 7.23, p < .03$

Mental Health

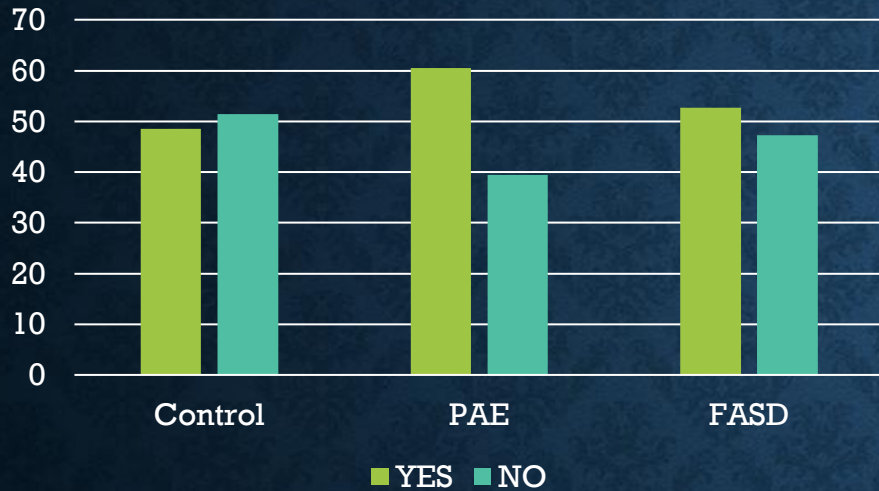


$\chi^2 = 8.77, p < .01$

Self-Reported Physical and Mental Health Status varies with Alcohol-Exposed reporting more problems.

“DO YOU HAVE PROBLEMS WITH...”

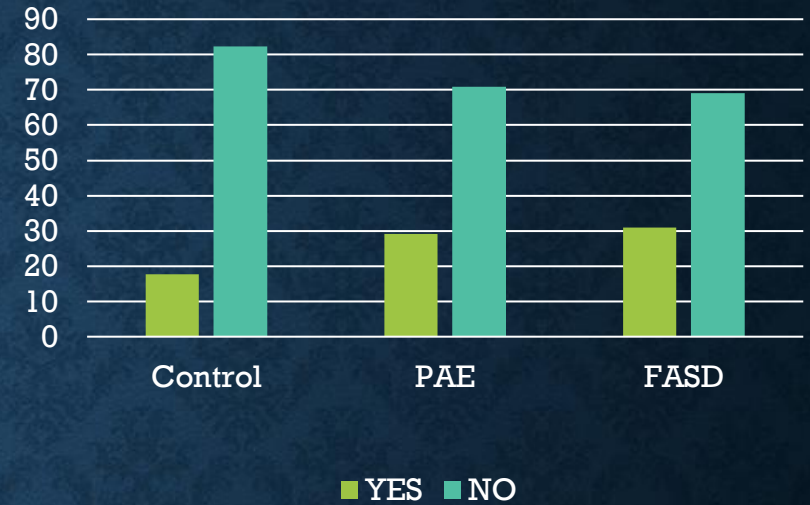
Eyes/Vision



$X^2=3.77, p=.15$

More than 50% of all groups wear glasses. “Everyone” at this age has these problems

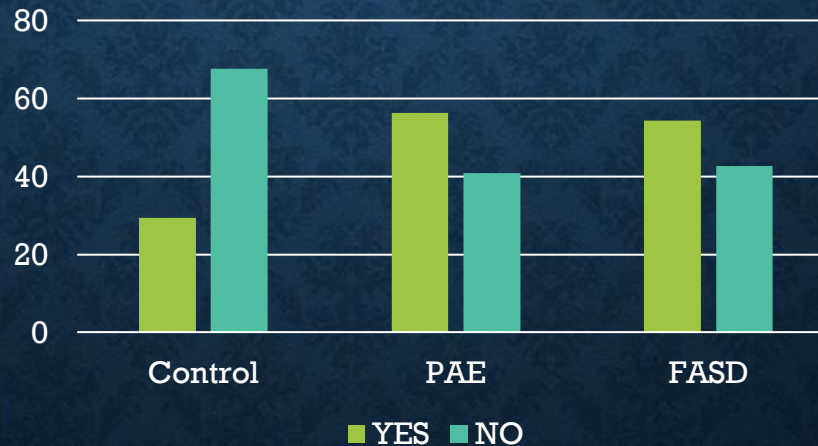
Hearing



$X^2=6.8, p<.03$

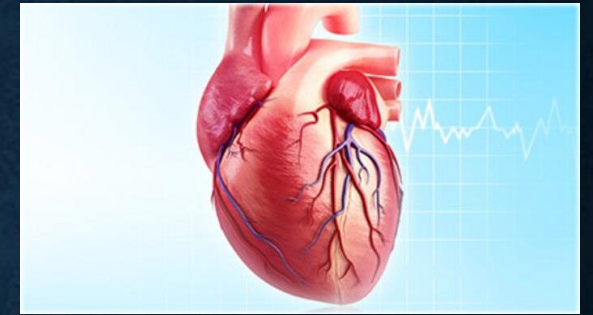
Alcohol-exposed individuals reported significantly more hearing and dental problems than did controls.

Teeth/Dental

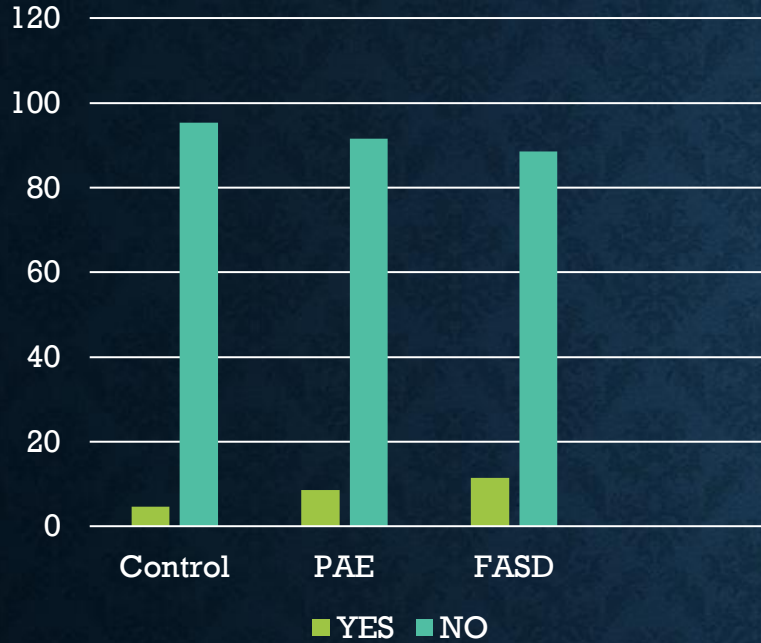


$X^2=27.4, p<.000$

CARDIOVASCULAR



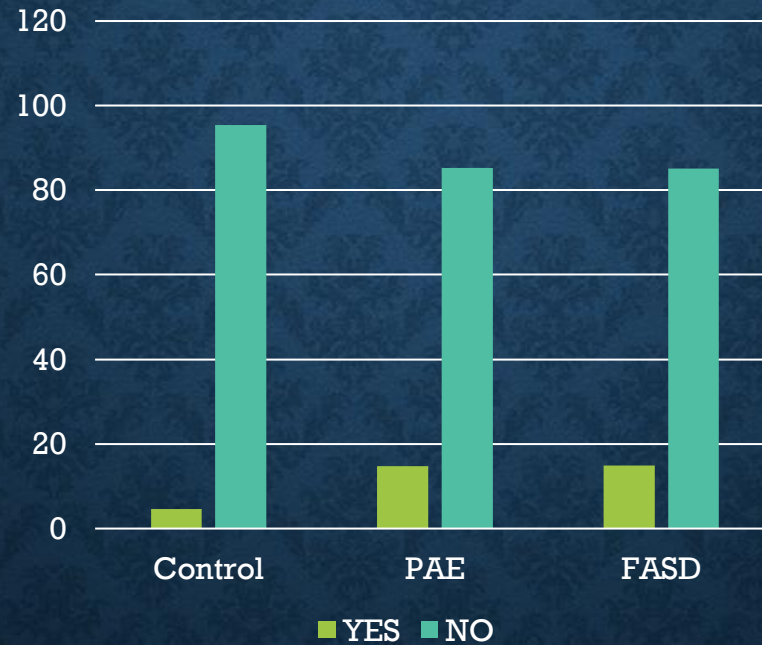
“Heart Problem as Child?”



$X^2=3.54, p=.17$

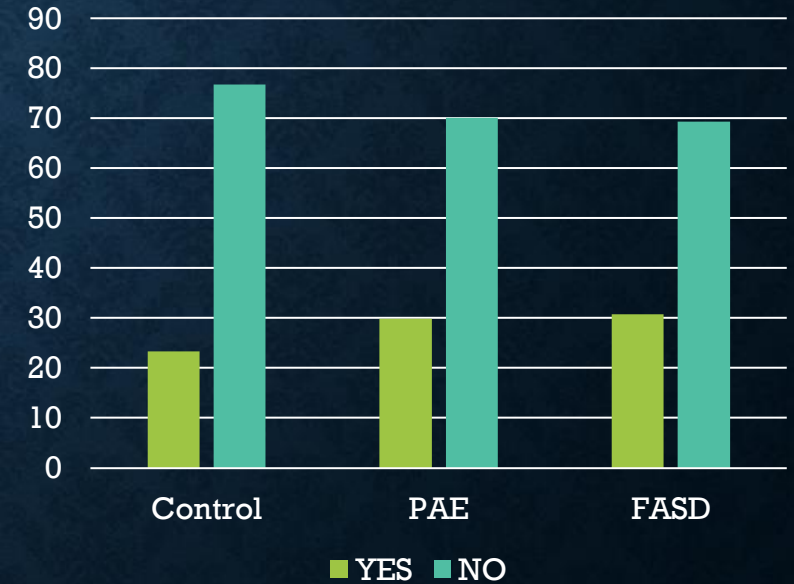
Cardiovascular outcomes are suggestive in childhood and emerging in middle age. Need to control for Race, Sex, and BMI.

“Heart Problems Now”



$X^2=8.73, p=.01$

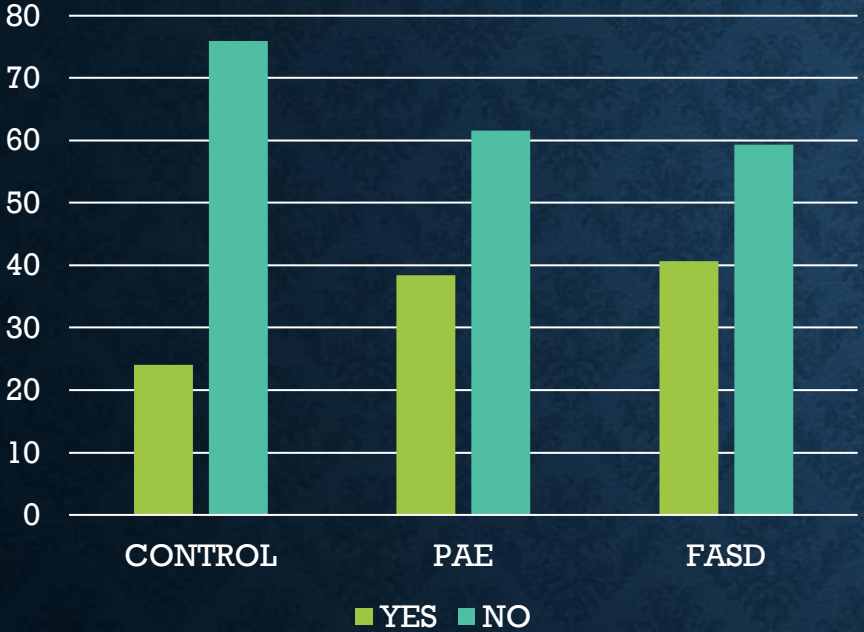
“High Blood Pressure. Adult?”



$X^2=1.95, NS$

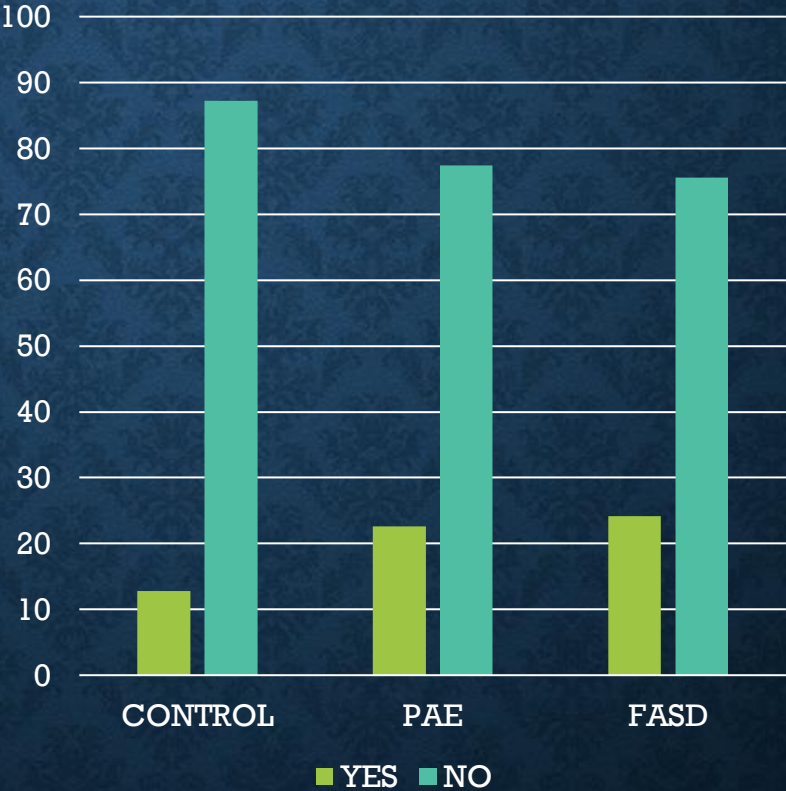
GASTROINTESTINAL

“Heartburn or Stomach Problems”

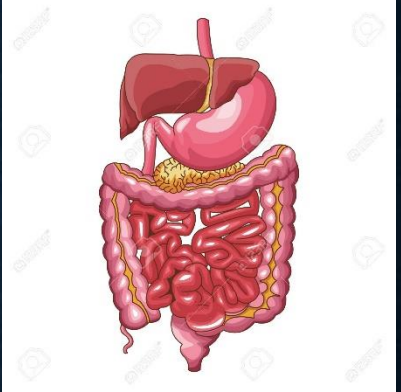


$X^2=8.76, p<.01$

“Bowel Problems?”

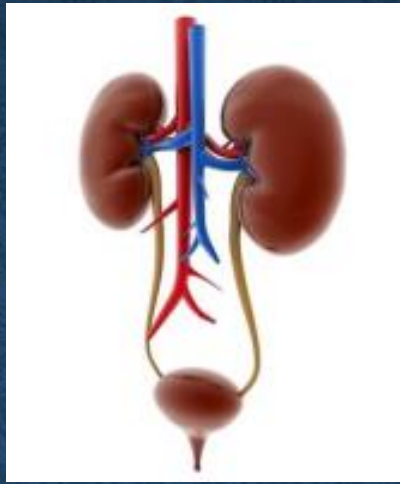


$X^2=5.9, p<.05$



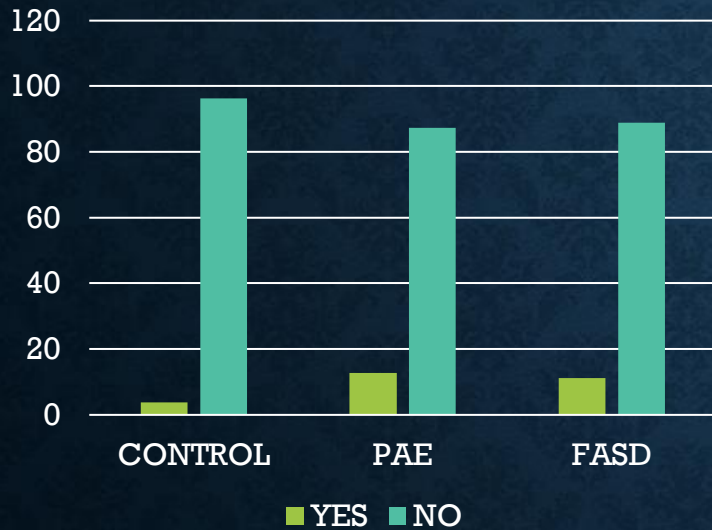
More Alcohol-Affected individuals report current GI problems.

“Have you ever had.....”



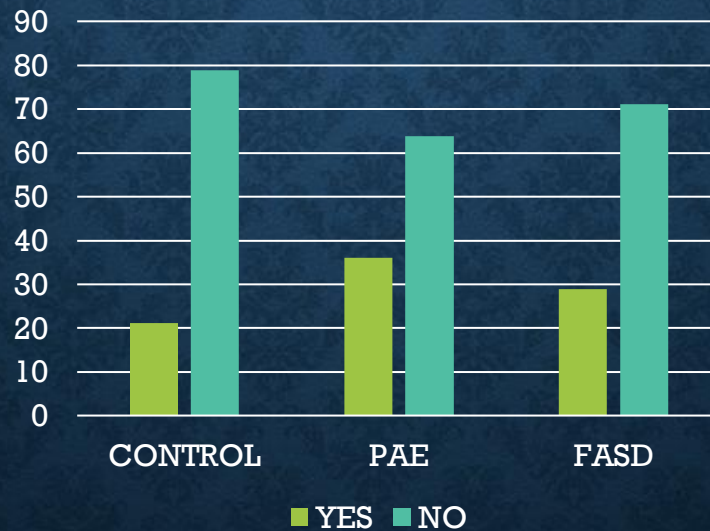
URINARY TRACT

“Kidney Stones”



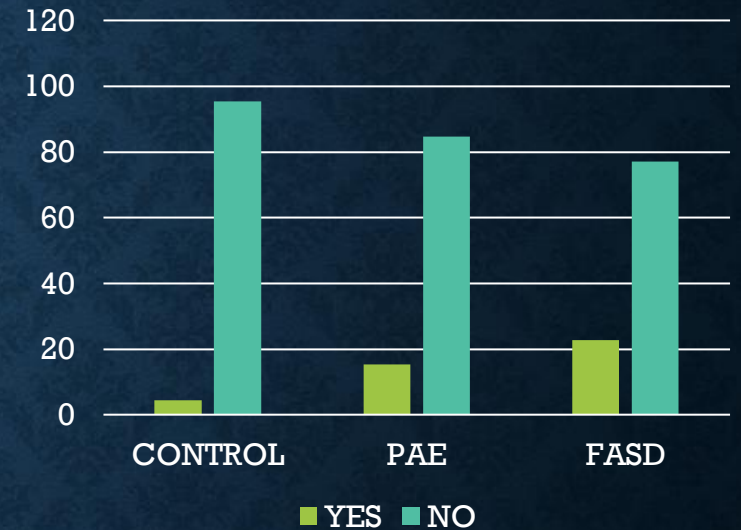
$X^2=6.94, p<.03$

“Bladder Infections”



$X^2=7.07, p<.03$

“Incontinence?”



$X^2=16.71 p<.001$

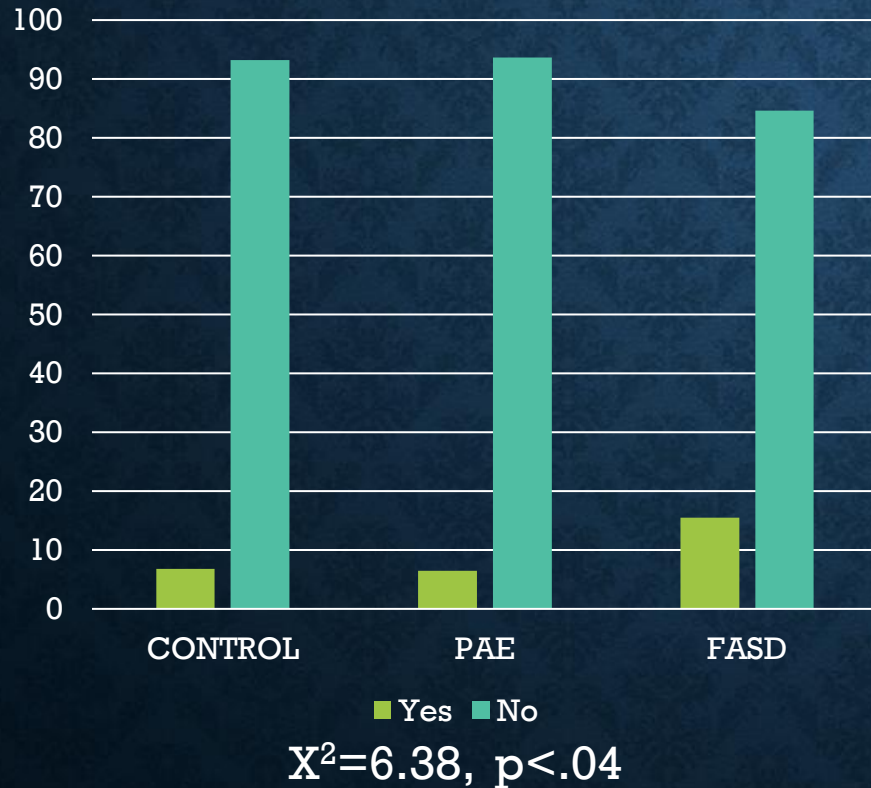
Increased Kidney Stones, Bladder Infections and Incontinence in Alcohol-Affected individuals.



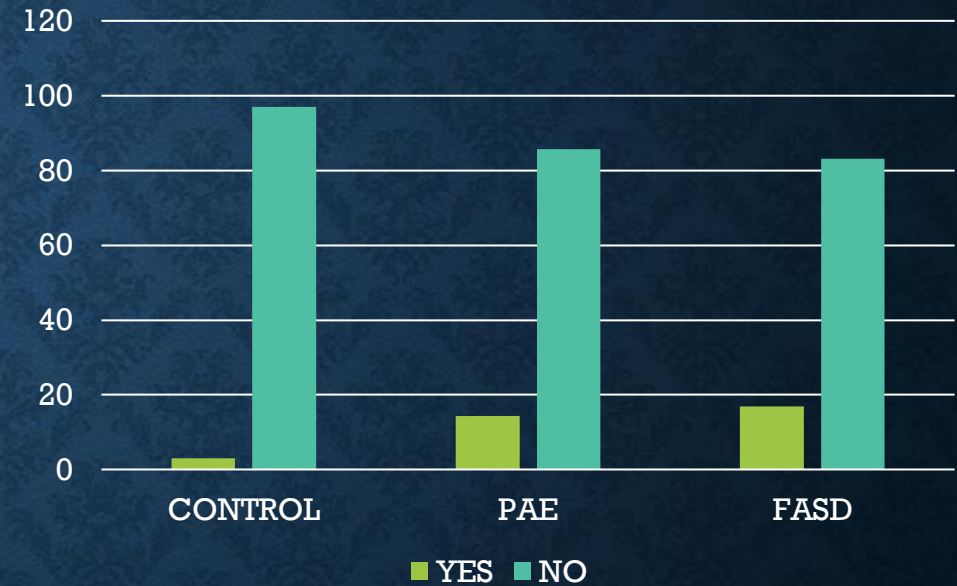
“Has a Medical Professional Diagnosed you as having....”

ENDOCRINE

“Diabetes”



“Thyroid Disorder?”

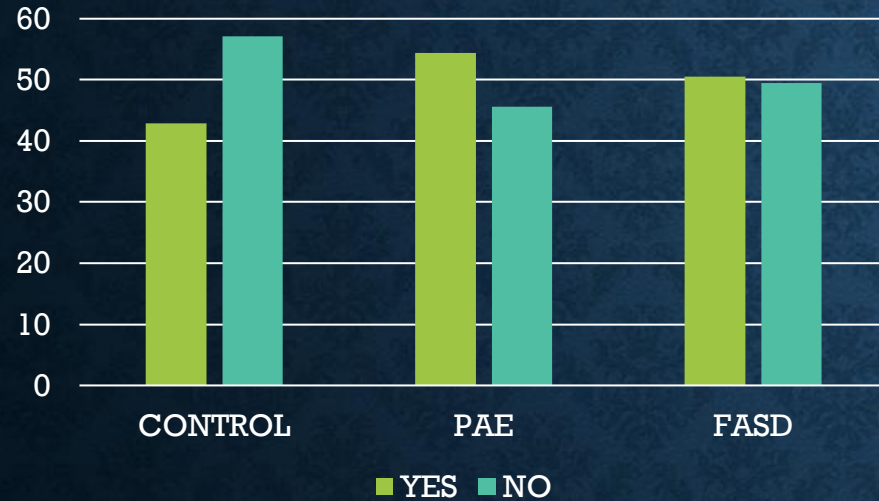


$X^2=13.45, p<.001$

Increased in diabetes in FAS/Dysmorphic.
Thyroid problems are more common in Alcohol-Affected individuals.

“Has a Medical Professional Diagnosed you as Having....”

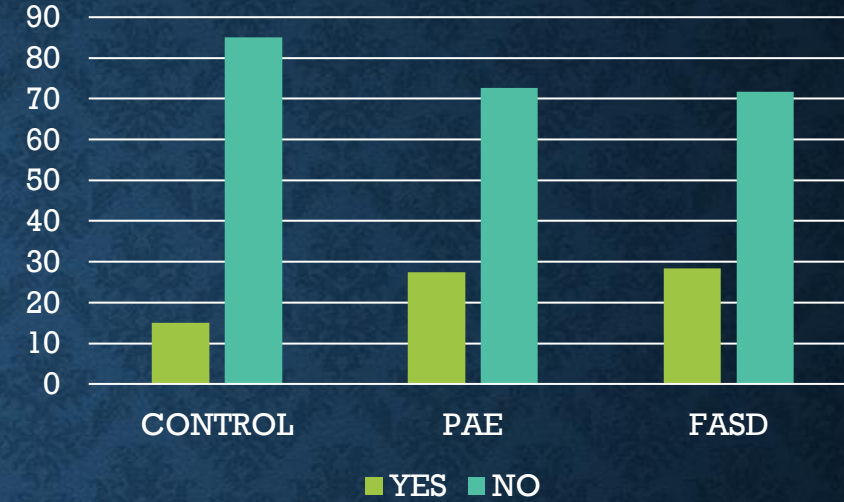
Allergies



$X^2=3.55, p=.17, NS$

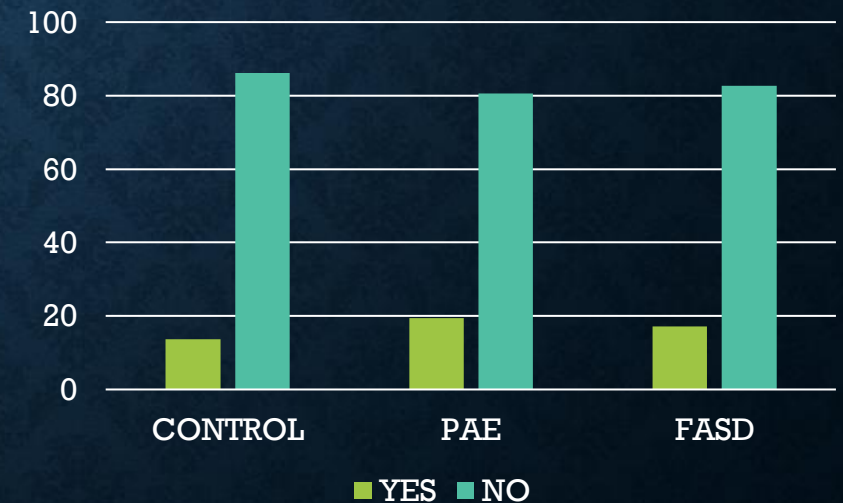
Medically Diagnosed problems with Skin are more common in Alcohol-Affected individuals. Other autoimmune problems are not significantly different.

Skin Problems



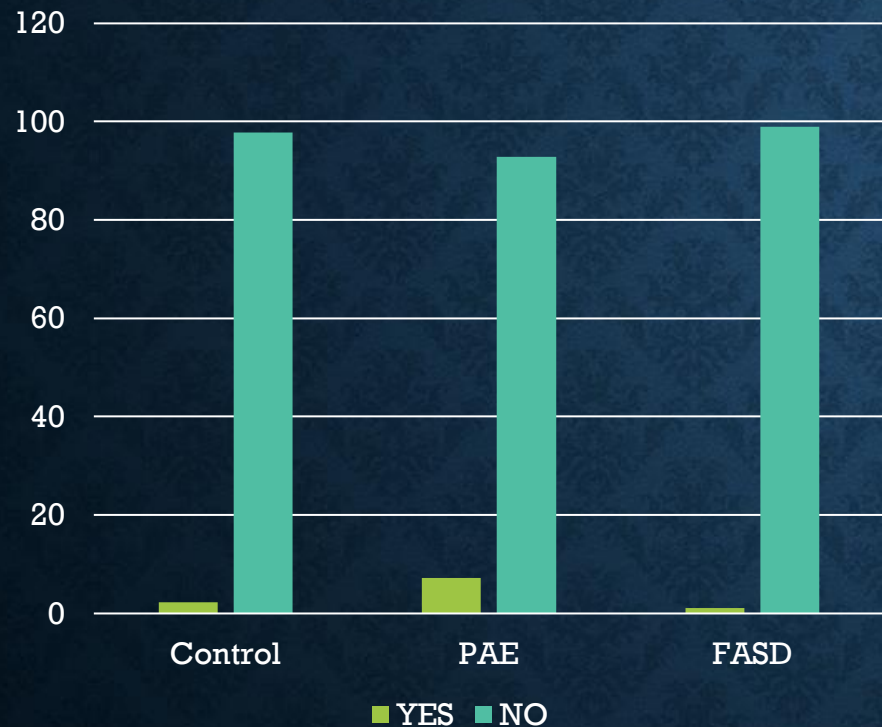
$X^2=7.58, p<.02$

Autoimmune Disorder



$X^2=1.47, p=.47, NS$

“HAVE YOU HAD CANCER?”



$X^2=6.7, p<.03$

TYPES Of CANCER REPORTED

Breast Cancer (3)
Cervical Cancer (2)
Colorectal
Endometrial
Melanoma
Skin Cancer, Basal (2)
Not Specified

10 Alcohol Affected individuals reported having cancer (4.6%).

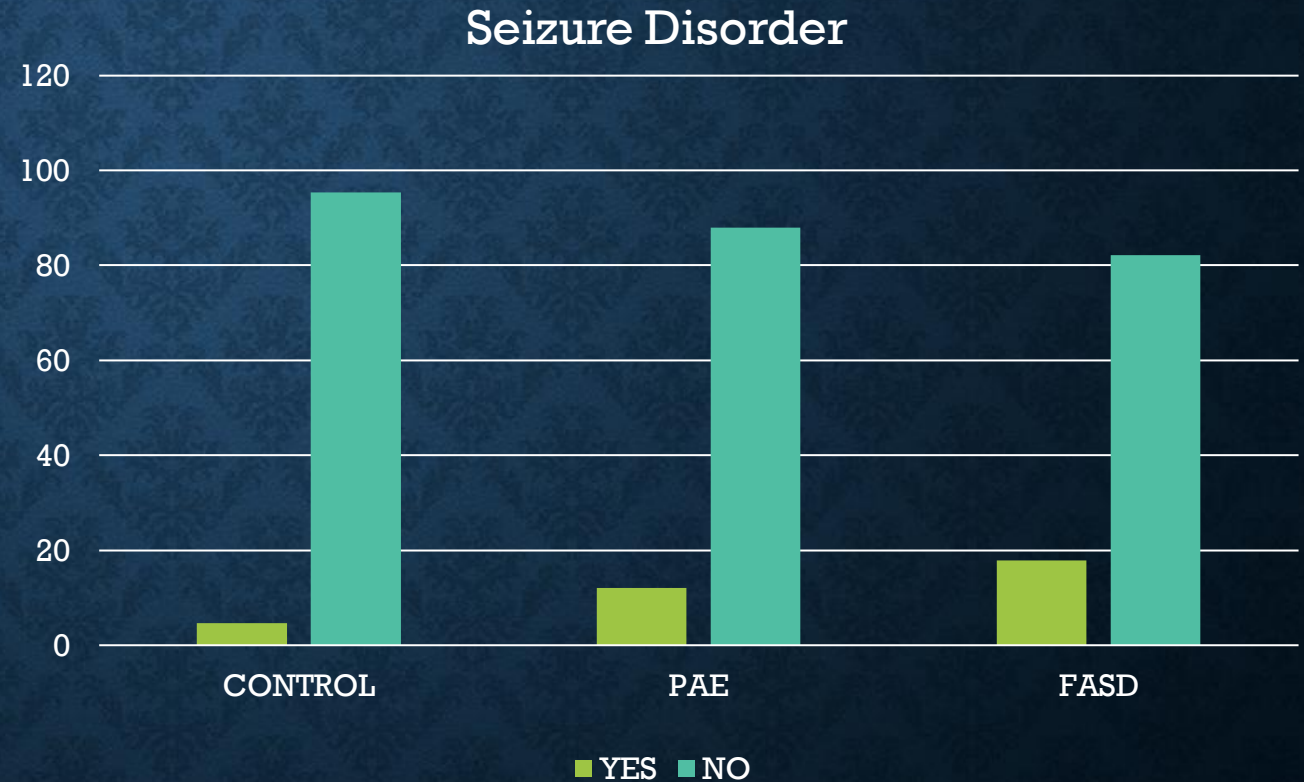
3 Controls reported cancer (2.3%)

Relative risk (RR) of cancer in alcohol group is 5.43 .

**“HAS A MEDICAL PROFESSIONAL
DIAGNOSED..”**



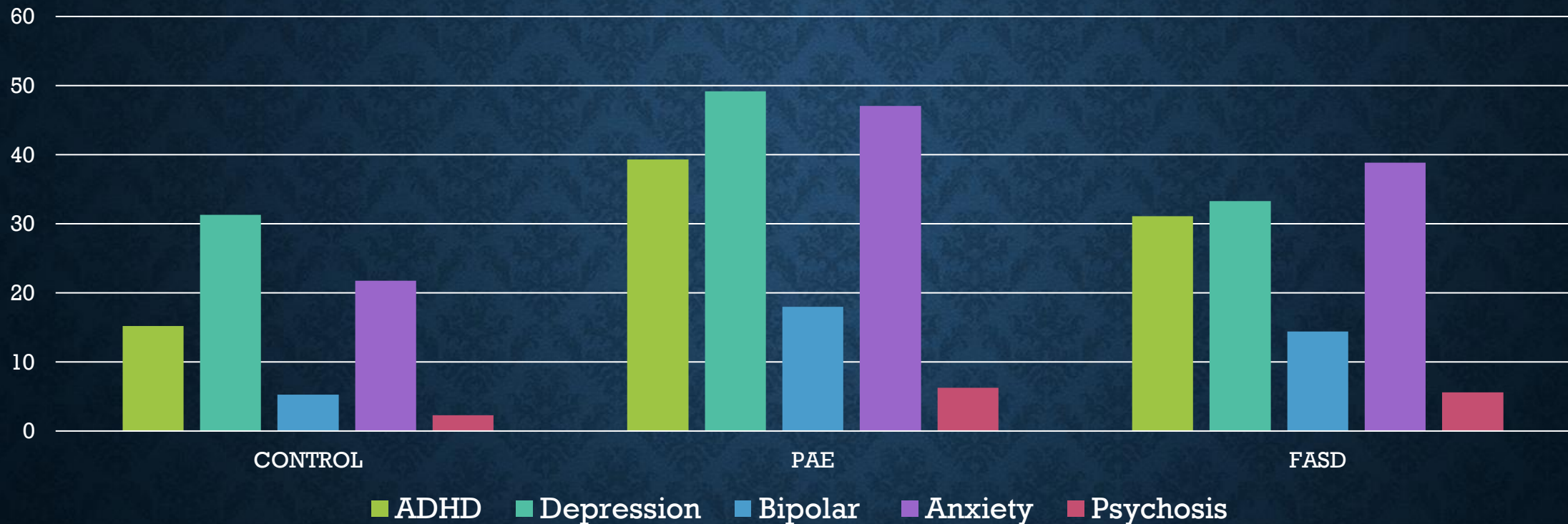
Alcohol-Exposed Individuals report
Seizure Disorders more frequently.



$X^2=9.96, p<.007$

MENTAL HEALTH

Diagnosed Mental Health Problems in Alcohol and Control Groups (%)



ADHD: $X^2=19.07$, $p<.000$

Depression: $X^2=9.91$, $p<.007$

Bipolar Disorder: $X^2=10.29$, $p<.006$

Anxiety Disorders: $X^2=18.53$, $p<.000$

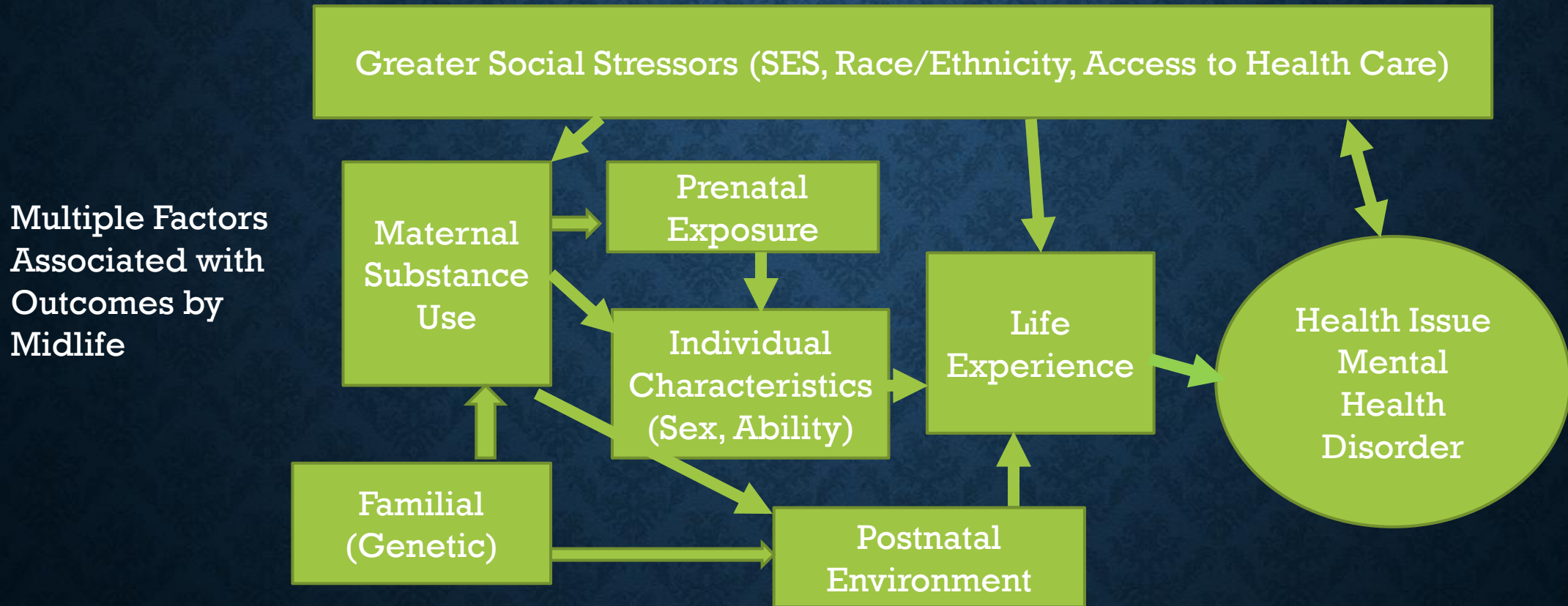
Psychoses: $X^2=2.76$, $p=.25$, NS

With the exception of Psychoses, the Alcohol Groups have significantly higher rates of Diagnosed Mental Health Disorders.

HOW CAN WE UNDERSTAND THESE OUTCOMES?

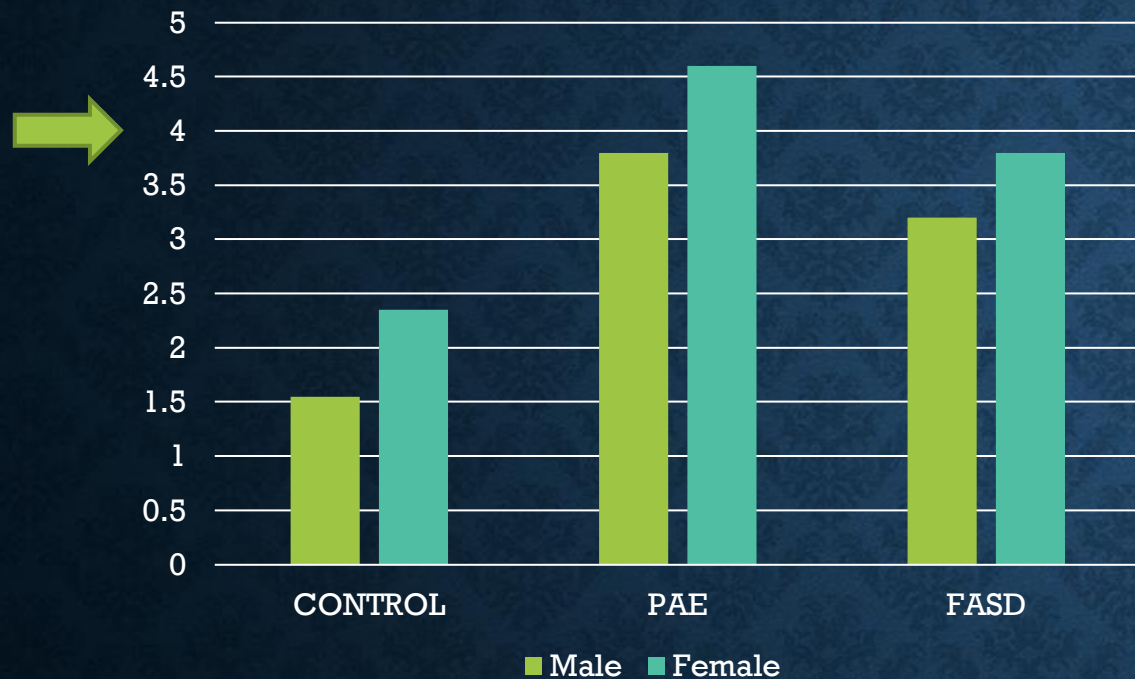
- Is just that Prenatal Alcohol Exposure is a direct cause of negative Health and Mental Health Outcomes?
- Is Prenatal Exposure Associated with Health and Mental Health Outcomes?
- Is Prenatal Alcohol Exposure one of many factors affecting outcomes?

WHAT IS THE RELATIONSHIP BETWEEN ALCOHOL EXPOSURE AND HEALTH AND MENTAL HEALTH OUTCOMES?



Some Possible Relationships based on Previous Research.

ADVERSE CHILDHOOD EXPERIENCES (ACES) (N=382)



Alcohol: $F_{(2,349)} = 15.99, p < .000$

Sex: $F_{(2,349)} = 3.55, p < .03$

A by S: $F_{(3,349)} = < 1, ns$

Total ACEs higher in Alcohol-Exposed.
 Items that were significantly different
 concerned Custody, Substance USE
 Disorders, Incarceration and Child Abuse.

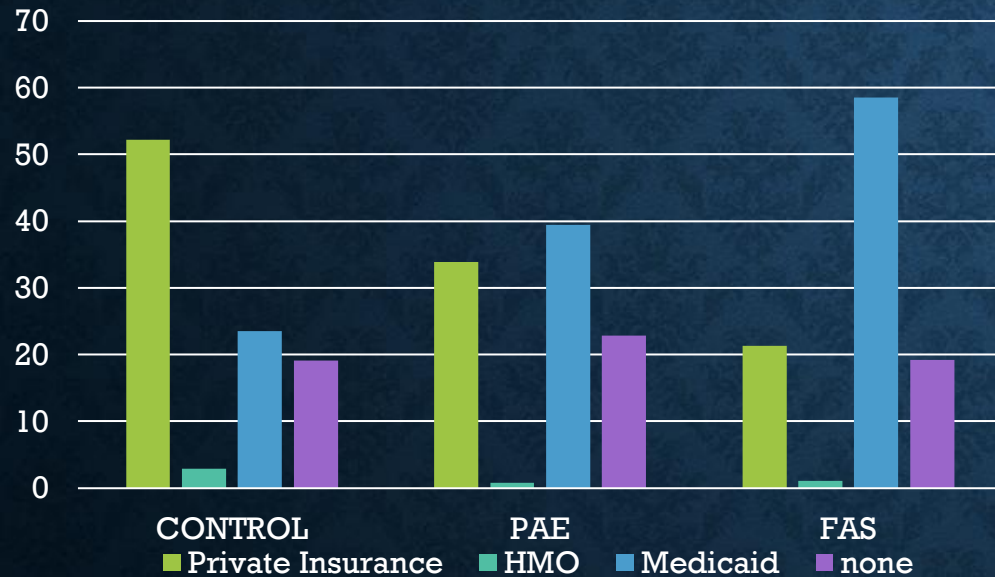
1. **Parent died:** Alcohol: 16.3%; Control: 11.1%, NS
2. **Custody Changed:** Alcohol: 57.8%, Control: 10.3%, $X^2=77.38, p < .000$
3. **Depressed Caregiver:** Alcohol: 30%; Control: 21.1%, $X^2=5.71, p = .06, NS$
4. **Caregiver AUD:** Alcohol: 49%; Control: 26%, $X^2=17.48, p < .001$
5. **Caregiver DUD:** Alcohol: 34%; Control: 16%, $X^2=14.05, p < .001$
6. **Incarcerated Family Member:** Alcohol: 28.4%; Control: 4.8%, $X^2=28.1, p < .000$.
7. **Parents divorced:** Alcohol: 54%; Control: 33%, $X^2=17.3, p < .001$.
8. **Domestic Violence:** Alcohol: 39.5%; Control: 16%, $X^2=128.76, p < .001$
9. **Physically Abused:** Alcohol: 34.8%; Control: 12%, $X^2=25.8, p < .001$.
10. **Verbally Abused:** Alcohol: 44%; Control: 28%, $X^2=10.46, p < .03$.
11. **Sexually Abused:** Alcohol: 37%; Control: 8%, $X^2=37.9, p < .000$.

“Do you have Health Insurance?”

Not different: response from each group ~89%.

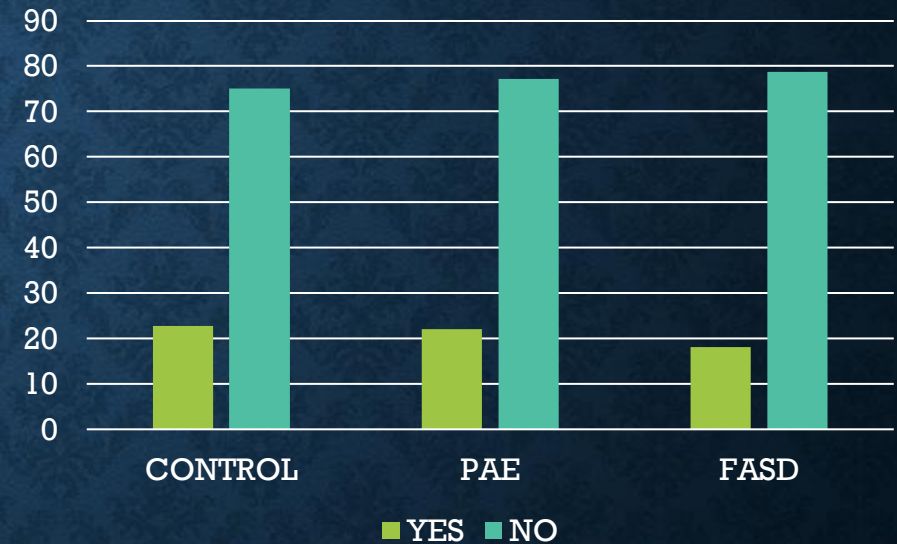
“What type of insurance do you have?”

$\chi^2=39.4, p<-.0000$



Alcohol-Exposed more likely have Medicaid vs Private Insurance. ~20% report none.

“IN THE LAST 12 MONTHS DID YOU EVER NOT GO TO THE DOCTOR BECAUSE OF COST?”



But no difference in obtaining care reported. ~20% report not obtaining care.

MULTIPLE INFLUENCES ON MEDICAL DIAGNOSES

Cancer Diagnosis

Likelihood Ratio Tests			
Effect	β	X^2	Significance
Prenatal Alcohol	2.56	4.34	p<.04
Sex (female)	1.65	3.74	p=.053
SES	.007	.08	NS
ACES	.160	1.67	NS
Age	.20	18.1	p<.001

Factors contributing to **cancer diagnosis** using Multinomial Regression Analysis (MRL).

Cancer diagnosis is more common in those who were prenatally exposed to alcohol, female and older.

Diagnosis of diabetes is more common in those who were prenatally exposed to alcohol, female, older, and had lower SES.

Diabetes

Likelihood Ratio Tests			
Effect	β	X^2	Significance
Prenatal Alcohol	.98	3.97	p<.05
Sex (female)	-.79	3.00	p=.08
SES	.03	3.36	p=.07
ACES	-.07	.87	Not significant
Age	-.051	3.91	p<.05

Factors contributing to **diabetes** using Multinomial Regression Analysis (MRL).

MULTIPLE INFLUENCES ON MEDICAL DIAGNOSES

Thyroid Disorder

Likelihood Ratio Tests			
Effect	β	X^2	Significance
Prenatal Alcohol	2.17	9.2	p<.002
Sex (female)	-1.69	10.6	p<.001
SES	.001	<1	Not significant
ACES	-.166	5.99	p<.01
Age	-.04	2.31	p=.13, NS

Factors contributing to **thyroid disorder diagnosis** using Multinomial Regression Analysis (MRL).

Thyroid disease is more common in those who were prenatally exposed to alcohol and had childhoods with greater adversity.

Diagnosis of Kidney stones is impacted by prenatal exposure to alcohol and age.

Kidney Stones

Likelihood Ratio Tests			
Effect	β	X^2	Significance
Prenatal Alcohol	1.31	3.86	p<.05
Sex	.09	<1	Not significant
SES	.002	<1	Not significant
ACES	.025	<1	Not significant
Age	-.057	5.63	p<.02

Factors contributing to Kidney Stones using Multinomial Regression Analysis (MRL).

WHAT ARE THE IMPLICATIONS OF THESE FINDINGS?

HEALTH CARE

- **These results suggest that alcohol exposure may have long-term association with a range of medical problems. When individuals are known to have such exposure, their medical providers should screen for problems.**
 - **Alcohol exposed adults should have regular medical checkups and medical providers should be aware of this as a risk factor.**
 - **At this time, we don't know if these problems are the result of "premature aging".**
- **Mental Health problems are more common in alcohol affected individuals and should be the focus of screening in this group.**

PREVENTION OF LONG-TERM EFFECTS OF PRENATAL ALCOHOL EXPOSURE

- **Direct Effects of PAE**
 - **Alcohol Exposed individuals appear to have some outcomes that are directly associated with PAE. These obviously could have been prevented by abstinence during pregnancy. However, it is likely that, knowing about the potential for negative physical and mental health impacts, that early intervention efforts could reduce the impact on many of these outcomes.**
- **Indirect Effects and Associated Factors**
 - **Some of the negative consequences of PAE may be due to conditions that are associated with maternal substance abuse. For instance, negative childhood experiences. When a child is known to be exposed, attention to these associated factors could prevent or reduce long-term problems.**

FURTHER RESEARCH

The results of this study are still preliminary and suggest some areas that should be studied much more extensively.

- **Long-term outcomes in adulthood have not been studied systematically. Both the medical and social/emotional consequences of alcohol exposure need much more research with the goal of not just describing outcomes but understanding the mechanisms.**
- **This study concerned Midlife Adults and found significant medical and mental health problems. It is likely that these issues will be exacerbated with age. The potential for accelerated aging in many systems should be addressed.**
- **Finally, this is an observational study. It will be important to identify biophysiological factors that contribute to these outcomes, including the role of the immune system.**