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Adolescent Healthcare Contacts in the Year Before Suicide: a case control study

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Adolescent and Young Adult Healthcare Contacts in the Year Before Suicide: a Case Control Study

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Background

As seen in Figure 1, suicide rates among young people have been on a steady rise since 2007. Young adults aged 18-24 hold the highest rates of suicide related behavior, with 11.8% reporting suicidal thoughts and 1.8% with reported suicide attempts. [1]
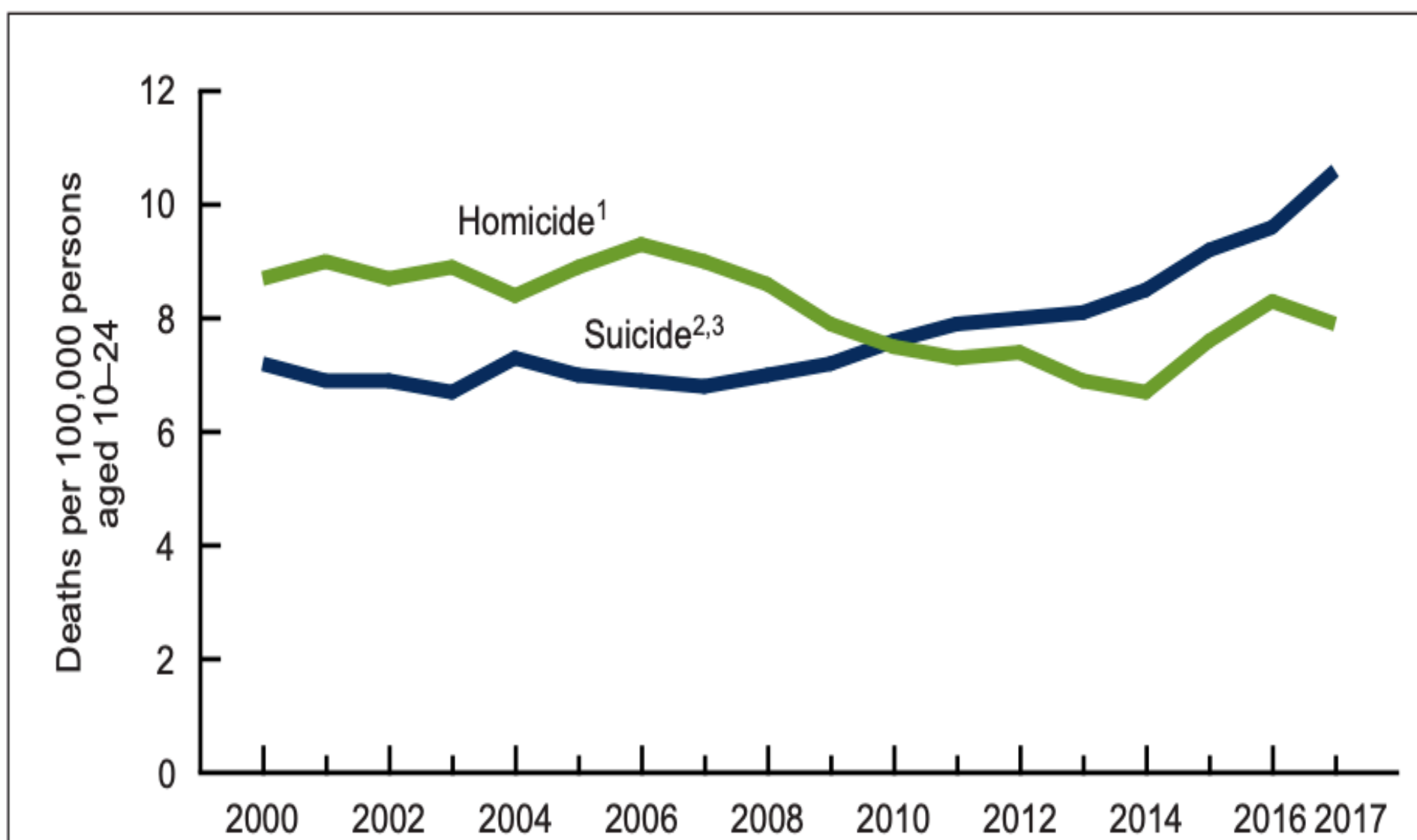

Figure 1: Suicide and homicide death rates among persons aged 10-24: United States, 2000-2017

Historically, the onus has fallen on psychiatric and mental health services to identify at-risk youth. This association between mental health and suicide risk has been widely supported, with current data reporting that 41.3% of young people had a mental health diagnosis prior to death by suicide. Additionally, inpatient psychiatric treatment has been identified as the strongest predictor of suicide risk with 15% of those who died by suicide receiving treatment in the year prior to their death. [2]

Research on this subject has primarily been across all age groups, with most preventative initiatives being implemented within single hospital systems or specific healthcare settings (i.e. emergency department or mental health). [5, 6]

Given their unique risk, it is necessary that research specifically invests in understanding youth-specific patterns of healthcare usage as we work to combat the rising rates of suicide-related behavior within this population. This includes their decreased utilization of and access to care, largely limited by both stigma and their reliance on adults for access. As such, this project was designed to provide a comprehensive analysis of adolescent and young adult healthcare patterns in the year prior to their death by suicide.

Methods

Sample
- Mental Health Research Network
- Cases: Participants aged 14-24 who died by suicide between 2000-2013 (n=445)
- Controls: random selection of 100 control individuals per case (n=4,450)

Data
- Relevant health systems data pulled from EMR using ICD-10 coding
- Records on demographics, encounters, diagnoses standardized across sites
- Index date, established based on date of death, was used to capture 30, 90, and 365 day time blocks

Analysis
- Data analyses will begin with aggregated descriptive statistics of suicides
- Chi-square analyses to examine how cases and controls differ by health service utilization
- Estimate odds of suicide by total number of visits by subtype using conditional logistic regression, with adjustment for age and sex

Results

Mental and Physical Health Conditions in the Year Prior to Death:

* Significant difference, p < 0.0001

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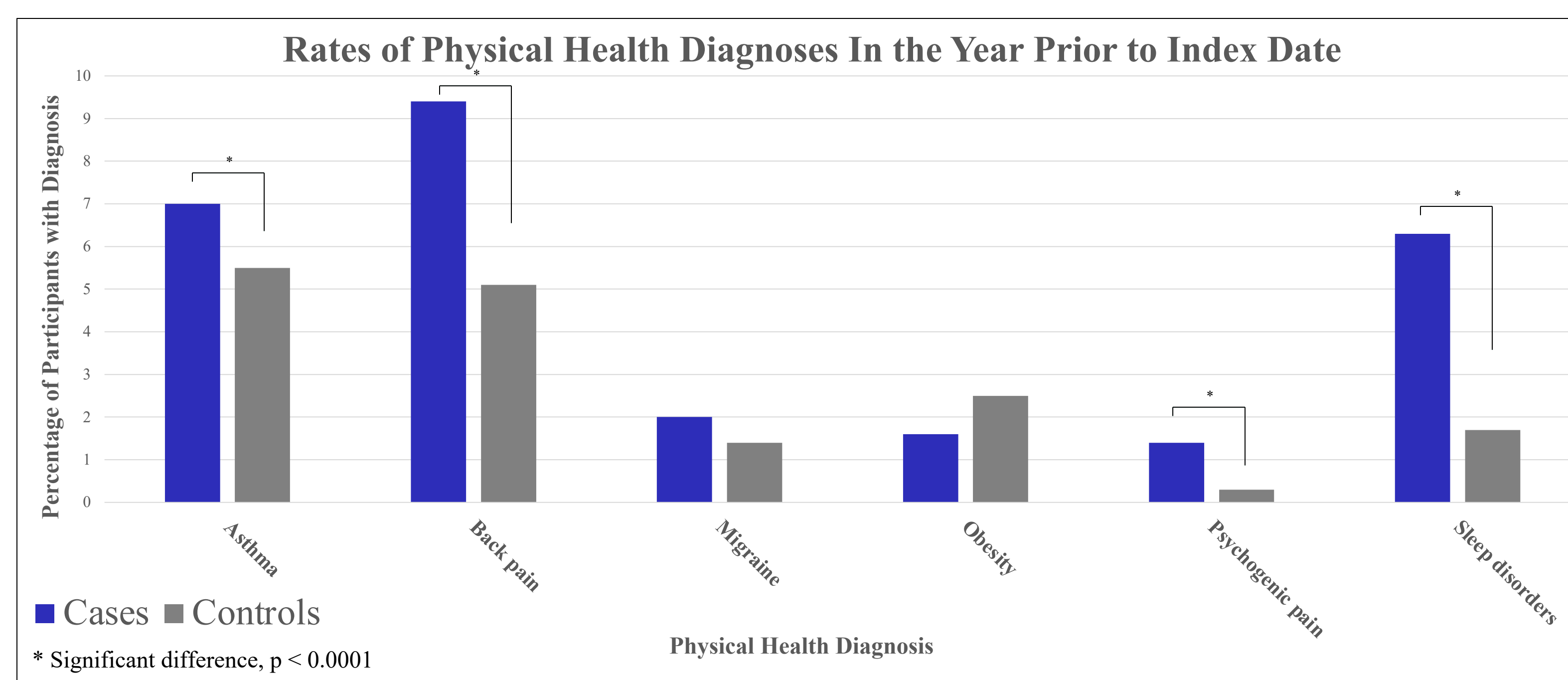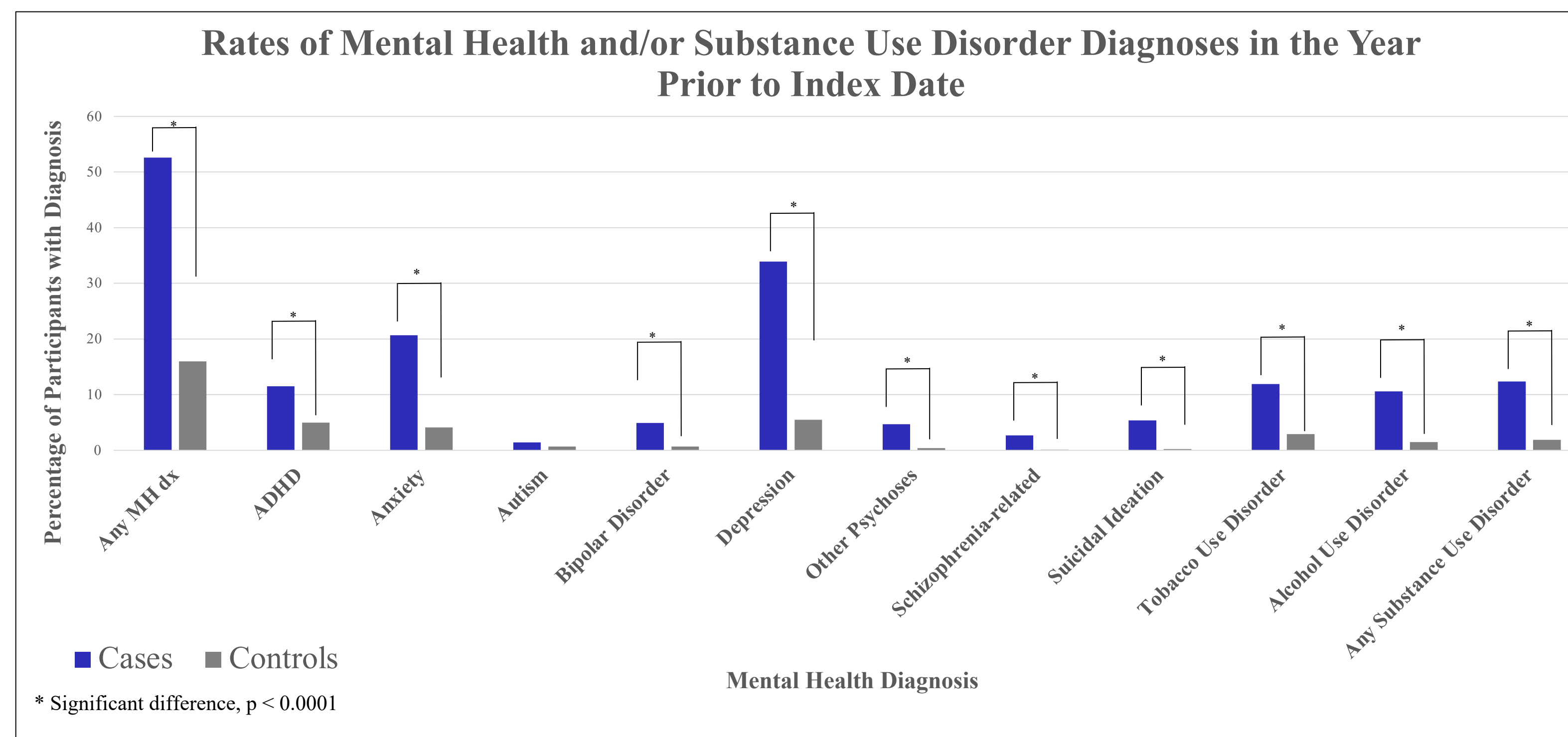
Healthcare Usage Patterns in the Year Prior to Death:

Visit Type	30 days prior to index date		90 days prior to index date		365 days prior to index date	
	Cases, % (n=450)	Control, % (n=4500)	Cases, % (n=450)	Control, % (n=4500)	Cases, % (n=450)	Control, % (n=4500)
Any encounter	49.4	24.0	65.2	44.7	88.8	79.5
Inpatient stay	12.6	0.3	16.4	0.8	23.6	2.7
ER/Urgent	15.7	1.4	22.0	3.8	37.8	12.4
Outpatient specialty	35.1	20.9	53.5	40.8	84.9	76.7
Primary care	20.9	12.8	36.6	27.9	69.9	63.3
Any visit with MH dx	23.4	3.4	32.8	6.4	48.1	13.4
Inpatient with MH dx	7.0	0.1	10.6	0.2	16.4	0.7
ER/Urgent with MH dx	3.8	0.1	7.4	0.3	13.3	1.2
Outpatient specialty with MH dx	18.4	3.2	27.2	5.9	43.6	12.5
Primary care with MH dx	7.9	1.1	12.4	2.6	24.5	7.4
Any visit with SUD dx	8.1	0.9	13.3	1.8	22.0	4.7
Inpatient with SUD dx	3.2	0.1	5.6	0.2	9.0	0.5
ER/Urgent with SUD dx	2.0	0.2	4.5	0.5	8.5	1.4
Outpatient specialty with SUD dx	3.6	0.6	6.7	1.3	14.6	3.9
Primary care with SUD dx	1.4	0.3	2.5	0.7	6.52	2.3

Table 2: Depicts percentage of cases and controls with coded clinic encounter, broken down into the timeframes of 30, 90, and 365 days prior to index date. Table shows rates of visits overall, breakdown by visit subtypes, and further analysis of visit subtypes including a diagnosis of any mental health (MH) condition or substance use disorder (SUD)
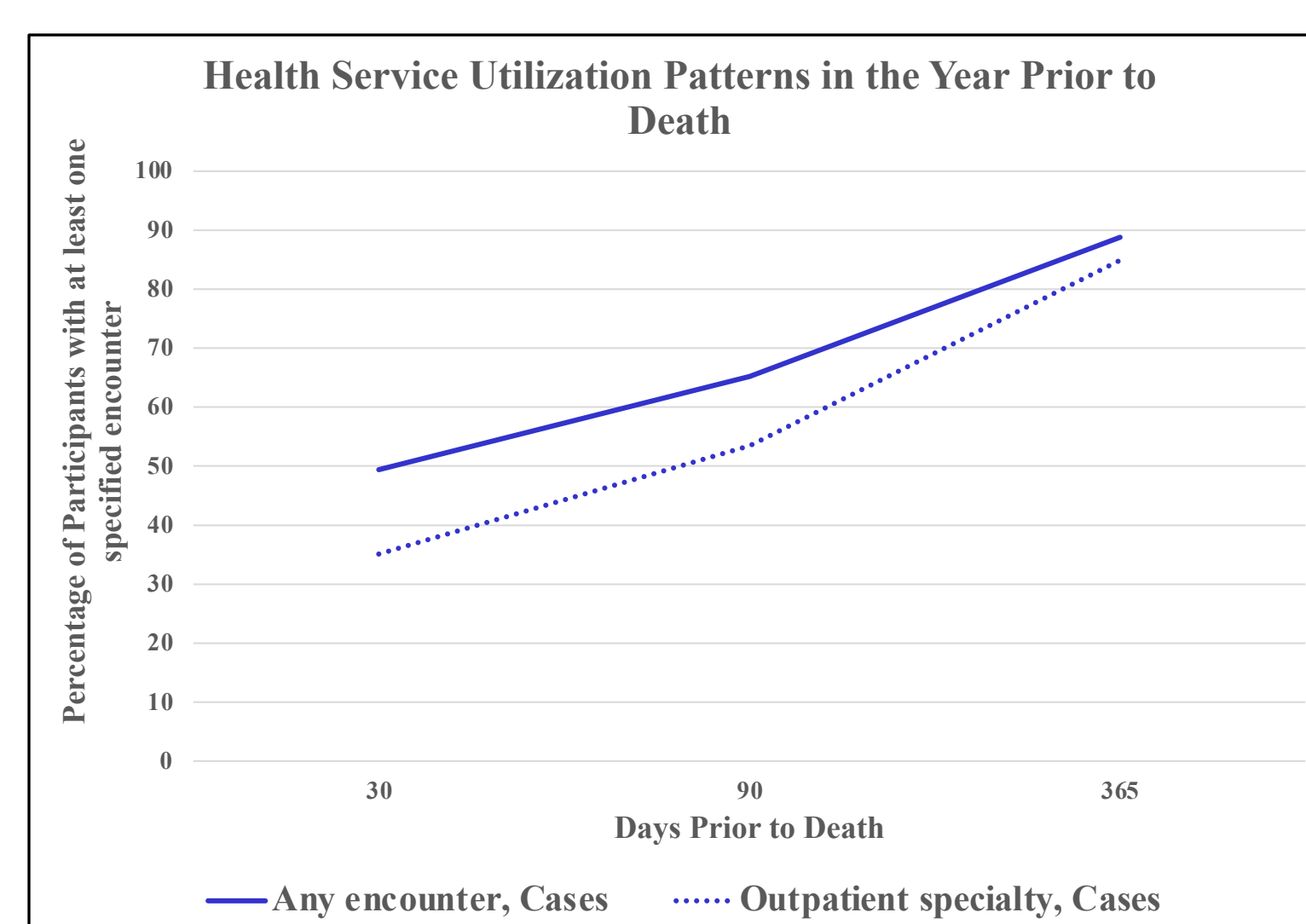

Figure 2: Based on data in Table 2, a depiction of rates of overall healthcare encounters and outpatient specialty encounters within 30, 90, and 365 days prior to death by suicide.

Visit type	Visit Frequency	
	Cases	Controls
	# of visits (SD); median	# of visits (SD); median
Any encounter	11.67 (16.02); 7	5.80 (9.92); 3
Inpatient stay	0.39 (1.05); 0	0.04 (0.29); 0
ER/Urgent	0.73 (1.27); 0	0.21 (0.88); 0
Outpatient specialty	8.14 (12.70); 4	4.14 (6.68); 2
Primary care	2.99 (4.08); 2	2.22 (4.04); 1
Any visit with MH dx	4.04 (8.41); 0	0.71 (3.46); 0
Inpatient with MH dx	0.28 (0.81); 0	0.01 (0.16); 0
ER/Urgent with MH dx	0.23 (0.73); 0	0.02 (0.22); 0
Outpatient specialty with MH dx	3.21 (7.29); 0	0.64 (3.19); 0
Primary care with MH dx	0.56 (1.45); 0	0.14 (0.59); 0
Any visit with SUD dx	1.48 (8.59); 0	0.16 (1.33); 0
Inpatient with SUD dx	0.14 (0.50); 0	0.01 (0.16); 0
ER/Urgent with SUD dx	0.13 (0.61); 0	0.02 (0.24); 0
Outpatient specialty with SUD dx	1.11 (7.65); 0	0.13 (1.23); 0
Primary care with SUD dx	0.10 (0.46); 0	0.04 (0.37); 0

Table 1: Visit frequency amongst cases and controls in the year prior to index date. Table includes overall visit frequency, breakdown by visit subtypes, and further analysis of visit subtypes including a diagnosis of any mental health (MH) condition or substance use disorder (SUD).

Discussion

Overall, we saw that youth who died by suicide were more likely to have at least one mental health disorder (52% vs 16%), as well as higher prevalence of each individual disorder measured. Differences in physical health disorders were less pronounced, but were seen in areas that have been established in the adult literature. Close to half (49%) and nearly all (89%) of youth who died by suicide had a health care visit in the month and year prior to their death, respectively. Those who died by suicide had higher health care usage, both in breadth and frequency. Among those visits, outpatient were most common, with suicide decedents averaging 8 in the year before death. This provides us with a possible avenue for intervention and identification of at-risk youth. This study was the first of its kind, both in breadth and content, and provides us with an in-depth understanding of youth-specific healthcare patterns in the year prior to death by suicide. Additionally, data from eight healthcare systems across the United States allows for generalizability not seen in projects conducted at individual research institutions. With nearly half (48%) of adolescents who died by suicide lacking a mental health diagnosis in the year prior to their death, it is no longer sufficient to rely on mental health services to capture at-risk youth. High rates of healthcare utilization among those who died by suicide indicate a strong need for improving identification of youth while they are seeking services, thereby preventing future deaths.

Conclusion

Limitations:
- Current data does not specify outpatient specialty type, limiting our ability to create specialty specific interventions.
- Reliance on clinical coding for obtaining data. Atypical presentation can make coding variable across system or specialty.
- Limited race and/or ethnicity data available for the time period obtained

Next Steps :
- Further analysis based on specialty subtype
- Collection of data from 2010-present, in which race and ethnicity coding was more standardized.
- Consider expansion to include diagnoses such as anorexia nervosa, bulimia, conduct disorders.

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