
Determinants and Correlations of Excessive
Alcohol Use and Depression among College
Students in a North East University

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Alcohol use and Depression Among College Students



Alcohol Use among College Students

The 2005 Core Alcohol and Drugs survey conducted among a sample of 33,379 undergraduate students from 53 colleges reported that:

- 85% of college students drank alcohol during the previous year
- 73% of students drank alcohol in the previous 30 days
- 52% consumed five or more drinks in a single sitting during the previous two weeks

Consequences of Alcohol Use

Each year approximately,

- ❑ 1400 college students die from unintentional alcohol related injuries
- ❑ 2.1 million drive while under the influence of alcohol
- ❑ 600,000 are assaulted by a student who had been drinking
- ❑ 70,000 are victims of alcohol related sexual assault or rape

(Hingson, Heeren, Zakocs, Kopstein & Wechsler, 2002).

Depression

According to the 2005 ACHA-NCHA survey conducted among nearly 17,000 college students:

- ❑ 25% of the students reported they “felt so depressed it was difficult to function” three to eight times during the previous year.
- ❑ 21% reported “they seriously considered suicide” one or more time during the previous year.
- ❑ 12% of college students have been diagnosed with depression.

Depression Leads to

- Suicide, which is the second leading cause of death among college students
- Anxiety symptoms, eating disorders and substance abuse problems
- Feelings of emptiness and inadequacy
- Poor physical health
- Poor academic performance

(ACHA, 2002)

College Students at Risk

- ❑ Period of transition in life
- ❑ Exposure to new forms of stress: separation from the family, getting to know new peers, academic pressures and sharing living quarters with strangers
- ❑ Many may have problems adjusting to this transition, resulting in emotional turmoil

Research Questions

- Is there a significant correlation between excessive alcohol use and depression among college students?
- What are the significant demographic determinants of excessive alcohol use, depression and the coexistence of both among college students?
- Which health risk behaviors are significantly associated with excessive alcohol use, depression and the coexistence of both among college students?

Study Design

- ❑ This study utilized a non-experimental, cross sectional and analytic design
- ❑ ACHA- NCHA survey was used for data collection
- ❑ Analysis was done using SPSS (14.0) to identify the frequencies, group comparisons and correlations.
- ❑ Analysis included bivariate correlation, chi-square, linear and multiple logistic regression

Research Methods

- ❑ Research participants were randomly selected by stratifying university courses into three pools. The first pool targeted freshmen and sophomore students, the second pool targeted junior and senior students, and the third targeted graduate students.
- ❑ E-mails were sent to the professors inviting them to allow their students to participate in the survey during class time.
- ❑ Once professors agreed to allow their students to participate, the survey was administered in the classrooms

Dependent Variable

Drinking and Depression Status: consisting of three categories

- First category consisted of students reported using alcohol 10 days or more in the past month
- Second category consisted of the students diagnosed with depression
- Third category consisted of students reporting both excessive alcohol use and depression

Independent Variables

Demographics

1. Age (< 20 yrs, \geq 21yrs)
2. Gender (Females, Males)
3. Ethnicity (White, Non whites)
4. Year in School (Under grads, Grads)
5. Residence (On campus, Off campus)
6. Average Grades (AB/ C or below)

Behaviors

1. Binge Drinking/ 2 weeks
2. Smoking/ Previous Month
3. No Condom use/ Previous Month
4. No Physical Activity/ Previous Month
5. Multiple Sexual Partners / Previous Year
6. No Seat Belts Use/ Previous Year
7. BMI \geq 25%

Demographic Distribution (N= 609)

- ❑ Age ranged from 18 to 80 years ($M= 25.46$, $SD= 8.88$)
- ❑ 74 % Females, 26% Males
- ❑ 76.5 % European Americans, 9.1% followed by African Americans 5.7% Hispanics, 2.7% Asians, 4% other races
- ❑ 29.7 % Seniors, 15.3% Juniors , 14% Freshmen, 11.4% Sophomores & 29% Graduate students

Demographic Distribution

- ❑ 22% On-campus residence, 78% Off-campus residence
- ❑ 80 % Full time students
- ❑ 85.5 % Grade A/B, 14.5% Grade C or below

Results

Distribution of Sample Based on Drinking and Depression Status (560)

Proportion of Students Based on Alcohol use & Depression	Frequency	%
Drank 10 days or more the Previous Month	69	12.4
Diagnosed with Depression	76	13.3
Coexistence of Excessive Alcohol use and Depression	23	4.1
No Drinking & No Depression	392	70.2

Results

Distribution of Health Related Behaviors (N= 609)

Health Behaviors	Frequency	%
Smoking	202	37.1
No Physical Activity	380	69
➤25% BMI	186	37.7
No Condom Use	284	52.6
Multiple Sexual partners	159	28.4
No Seat Belt Use	125	22.6
Binge Drinking	188	34

Bivariate Correlation Results

- Significant correlation reported between excessive alcohol use and depression among college students:

$$\underline{r (609, 1) = .90, p = < .001.}$$

Chi square Results

Proportions of Drinking and Depression Status based on Demographics

Demographics	Excessive Drinking %	Depression %	Coexistence %	<i>P</i>
Age				.39
< 20 years	13.4	9.7	3.7	
> 20 years	12.4	15.7	3.8	
Gender				.01*
Females	10.4	16.9	3.1	
Males	18.3	7.6	3.1	
Ethnicity				<.001**
Whites	14.9	14	4.3	
Non Whites	2.5	11.9	3.4	
Year in School				.96
Under grads	13.2	13	4	
Grads	10.7	13.7	4.8	

Chi square Results

Proportions of Drinking and Depression Status based on Demographics

Demographics	Excessive Drinking %	Depression %	Coexistence %	P
Residence				.47
On campus	13.4	9.7	5.1	
Off campus	12.4	15.7	3.9	
Average Grades				.56
A/B	10.4	16.9	3.7	
C/D	18.3	7.6	3.8	

Chi square Results

Proportions of Drinking and Depression Status based on Health Behaviors

Variable	Excessive Drinking %	Depression %	Coexistence %	<i>P</i>
Smoking	10.4	13.9	4.5	.66
No physical Activity	12.3	17.5	2.9	.27
> 25% BMI	10.8	10.8	4.3	.24
No Condom Use	13.7	15.5	5.6	.02*
Multiple Sexual Partners	23.9	10.7	10.1	<.001**
No Seat belt use	15.2	16	4.8	.39
Binge Drinking	28.2	10.1	10.6	<.001**

Multiple Logistic Regression Results

Predictors Excessive Alcohol Use

Variable	B	SE	Odds Ratio	P
Gender(Females)	-.25	.34	.77	.46
Ethnicity (Whites)	1.32	.64	3.74	.00**
No Condom Use	-.58	.33	1.06	.07
Multiple Sexual Partners	1.03	.33	1.45	.00**
Binge drinking	2.33	.38	10.30	.00**

Note. Non-whites, males, single sex partner, do not binge drink, use condom, do not consume excessive alcohol and no depressed were used as reference categories.

Multiple Logistic Regression Results

Predictors of Depression

Variable	B	SE	Odds Ratio	P
Gender(Females)	.79	.38	2.2	.04*
Ethnicity (Whites)	.62	.37	1.85	.10
No Condom Use	-.45	.28	.63	.10
Multiple Sexual Partners	-.01	.34	.98	.96
Binge drinking	.16	.32	1.18	.60

Note. Non-whites, males, single sex partner, do not binge drink, use condom, do not consume excessive alcohol and no depressed were used as reference categories

Multiple Logistic Regression Results

Predictors of Excessive Alcohol Use & Depression

Variable	B	SE	Odds Ratio	P
Gender(Females)	.60	.64	1.82	.34
Ethnicity (Whites)	2.15	.72	.80	.76
No Condom Use	-.85	.59	.42	.14
Multiple Sexual Partners	2.65	.79	14.14	.00**
Binge drinking	2.03	.69	7.66	.00**

Note. Non-whites, males, single sex partner, do not binge drink, use condom, do not consume excessive alcohol and no depressed were used as reference categories.

Conclusions

- ❑ Excessive alcohol use and depression are strongly correlated among college students
- ❑ Gender (female) was the significant predictor of depression among college students.
- ❑ Ethnicity (White), having multiple sexual partners and binge drinking were significant predictors of excessive alcohol use.
- ❑ Multiple sexual partners and binge drinking were significant predictors of co-existence of excessive alcohol use and depression

Recommendations

- Further research is needed to explore the relationship between excessive alcohol use, depression and risky sexual behaviors.
- In depth analysis of co existence of excessive alcohol use and depression among college students is required
- Qualitative research is needed to analyze the social, environmental and emotional factors associated with excessive alcohol use and depression among college students

Behavioral Decisions and Emotional Trends Among College Students

***Examining Frequent Alcohol Consumption
and the Illness of Depression: A
Comparison of Trends, Actions, and
Emotions of Local and National University
Populations***

Laura E. Reynolds University of Rochester

NYSCHA 2008 Annual Meeting

Syracuse, New York

Introduction



- Biochemical and behavioral factors associated with binge drinking among the undergraduate population.
- Biochemical and behavioral factors associated with the illness of major depression.
- The hypothesized correlation of alcohol and the illness of depression.

Specification of Binge Drinking

- The Centers for Disease Control's National Center for Health Statistics defines heavy drinking as consuming five or more drinks on at least five occasions each month.
- Moderate drinking, as defined by the National Institute on Alcohol Abuse and Alcoholism, is the average number of drinks consumed daily that places an adult at low risk for alcohol problems.

Undergraduate Alcohol Consumption



- Specific behavioral patterns and an university environment fosters increased alcohol consumption.
- Undergraduate students consumption vs. young adults of the same age.

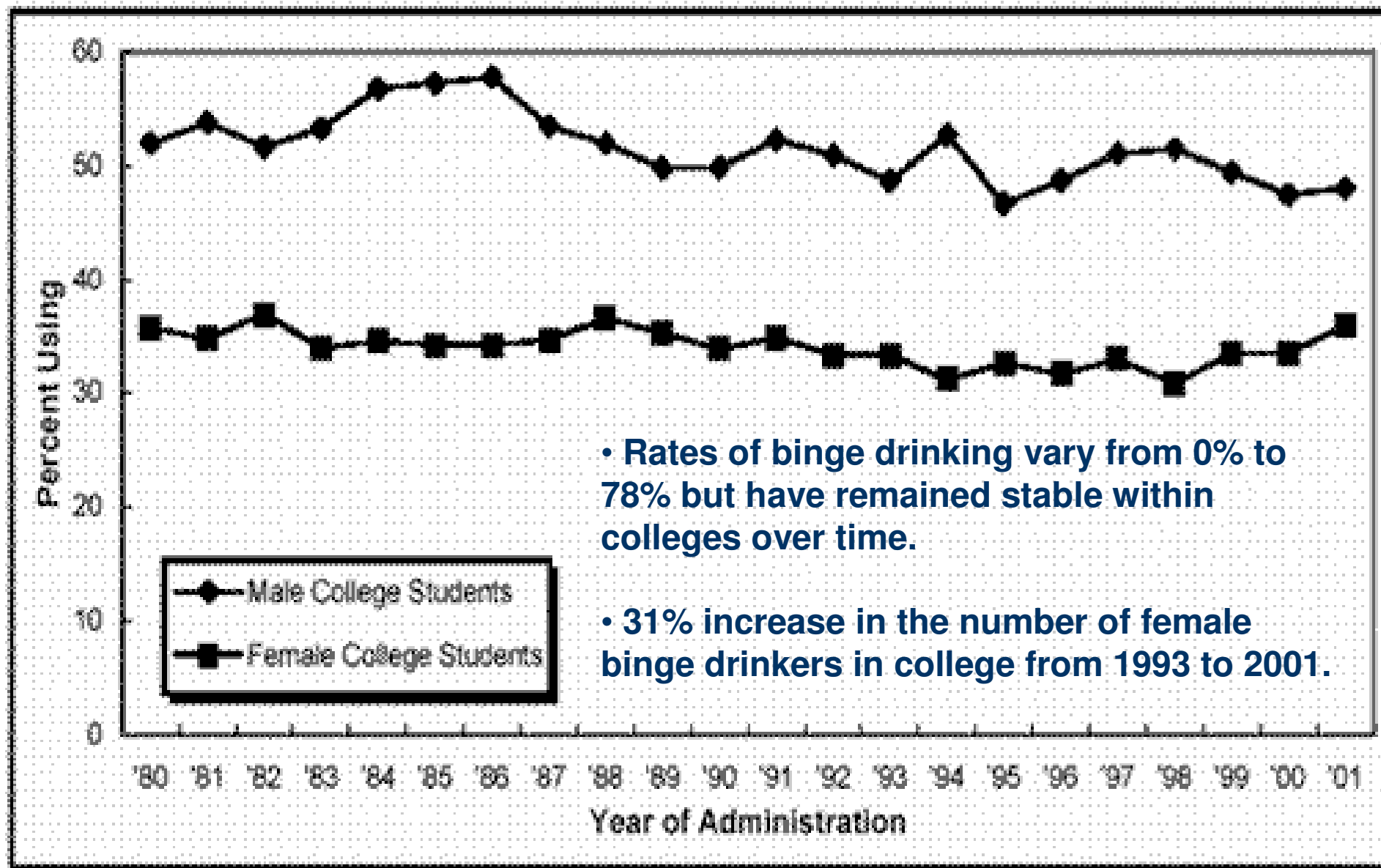
Undergraduate Binge-Drinking Rates: A Comparison of Studies

Harvard School of Public Health College Alcohol Study



- A survey of over 14,000 students at 120 four-year colleges in 40 states.
- The CAS examines key issues in college alcohol abuse.
- 2 out of 5 young adults in college binge on alcohol.
- Approximately 1 out of every 4 young adults in college drinks frequently, bingeing at least 3 times in 2 weeks.

Alcohol: Trends in Two-Week Prevalence of Five or More Drinks in a Row Among Male vs. Female College Students



Undergraduate Binge-Drinking Rates: A Comparison of Studies

Southern Illinois University Core Institute




Southern[™]
Illinois University
Carbondale

	<u>Core Survey 2003 30 Day Prevalence</u> The % of students who reported using each drug listed at least once within the 30 days prior to completing the survey. N= 38,857	<u>Core Survey 2004 30 Day Prevalence</u> The % of students who reported using each drug listed at least once within the 30 days prior to completing the survey. N=68,000	<u>Core Survey 2005 30 Day Prevalence</u> The % of students who reported using each drug listed at least once within the 30 days prior to completing the survey. N= 33,379
Alcohol	74.7%	72.0%	72.8%

Undergraduate Binge-Drinking Rates: A Comparison of Studies

University of Rochester American College Health Association National College Health Assessment

 UNIVERSITY OF ROCHESTER	National Results 2004 N=24,804	ACHA-NCHA 2004 N=491	ACHA-NCHA 2005 N=448
Alcohol use	67%	74%	73%
Binge drinking (5 or more drinks)	36%	43%	33%

The Biological Metabolism of Alcohol

- Alcohol is an addictive depressant that slows the activity of the central nervous system.
- As alcohol is readily a hydrophobic, lipid- soluble substance, it easily passes through the capillary endothelial cell junctions of the blood-brain barrier.
- Alcohol is transported via the systemic system to the brain.

The Biological Metabolism of Alcohol

- N-methyl-D-aspartic acid (NMDA) receptors are a glutamate-gated, voltage gated ion channels permeable to sodium, potassium, and calcium.
- It is hypothesized that alcohol's intoxicating effects are felt due to the inhibition of the NMDA receptor.
- Alcohol inhibits the flow of sodium across and expands the neuronal cell membrane, as well as blocks glutamate receptors, decreases serotonin activity and increases dopamine activity.
- Mechanism of popular sedatives may explain alcohol's ability to lessen anxiety.

The Illness of Depression According to the DSM-IV-TR

- A. Five (or more) of the following symptoms have been present during the same 2-week period and represent a change from previous functioning
1. Depressed mood most of the day, nearly every day.
 2. Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day.
 3. Significant weight loss or weight gain or decrease or increase in appetite nearly every day.
 4. Insomnia or hypersomnia nearly every day.
 5. Psychomotor agitation or retardation nearly every day.
 6. Fatigue or loss of energy nearly every day.
 7. Feelings of worthlessness or excessive or inappropriate guilt nearly every day.
 8. Diminished ability to think or concentrate.
 9. Recurrent thoughts of death, recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide.

The Illness of Depression among Undergraduate Populations

- Incidence of students diagnosed with depression has increased by 4.6% over a four-year time span, from 2004 to 2007.
- 45% of students ages 18-24 reported being so depressed that they had difficulty functioning.
- 94% of undergraduate students reported feeling overwhelmed by everything they had to do.

The Illness of Depression among Undergraduate Populations

- 15-20% of the undergraduate population have been diagnosed with depression.
- Of the 14.9% of students who reported having ever been diagnosed with depression, 25.2% are currently in therapy for depression.
- 38% said they are currently taking medication for depression.
- Suicide is the second leading cause of death for individuals ages 18-24.

The Interaction of Alcohol and the Illness of Depression

- Alcohol alters the production and functioning of transmitters such as dopamine, serotonin, GABA, and endorphins.
- Higher rates of symptoms of depression and anxiety are found during periods of heavy drinking and may contribute to an increased risk of suicide or relapse.
- Alcohol itself is a depressant; a drug that enhances the overall inhibitory affect of GABA-nergic receptors in the nervous system.
- Combining alcohol with their symptoms and prescribed antidepressants is detrimental to the treatment and recovery from depression.

Research at the University of Rochester

- This research study examined the interconnectedness of binge-drinking and depression among the college population at the University of Rochester.
- **HYPOTHESIS:** Increasing rates of binge drinking and diagnoses of depression among college students suggest a correlation between the effects of consistent binge drinking and the illness of depression. The continual consumption of five or more alcoholic beverages in one sitting, on at least 4-7 days within a 30 day period was hypothesized in this study to increase symptoms of depression and to detrimentally affect the recovery from depression once a diagnosis has been established.

Methods

- 13- page self administered questionnaire
 - Alcohol use, other substance use, current emotions, previously diagnosed medical conditions, and demographic information. BDI-II is a clinical tool used to determine the severity of depressive symptoms.
- Beck Depression Inventory - 2nd Edition
 - BDI-II is a clinical tool used to determine the severity of depressive symptoms.
- Distributed information on UCC, UHS, and local and national suicide hotlines information.
- N= 260
- Beck's score is the dependant variable.
- Binge drinking is the independent variable.

Results

N= 260

34% male / 66% female.

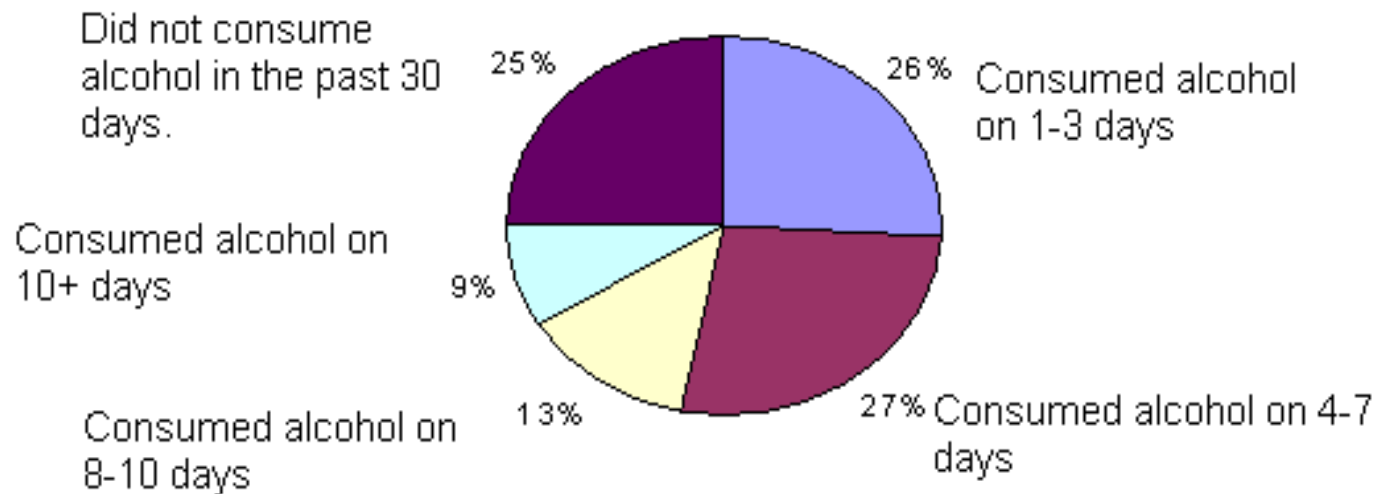
25% freshman

25% juniors

27% sophomores

23% seniors

Number of Days Consuming Alcohol



Results

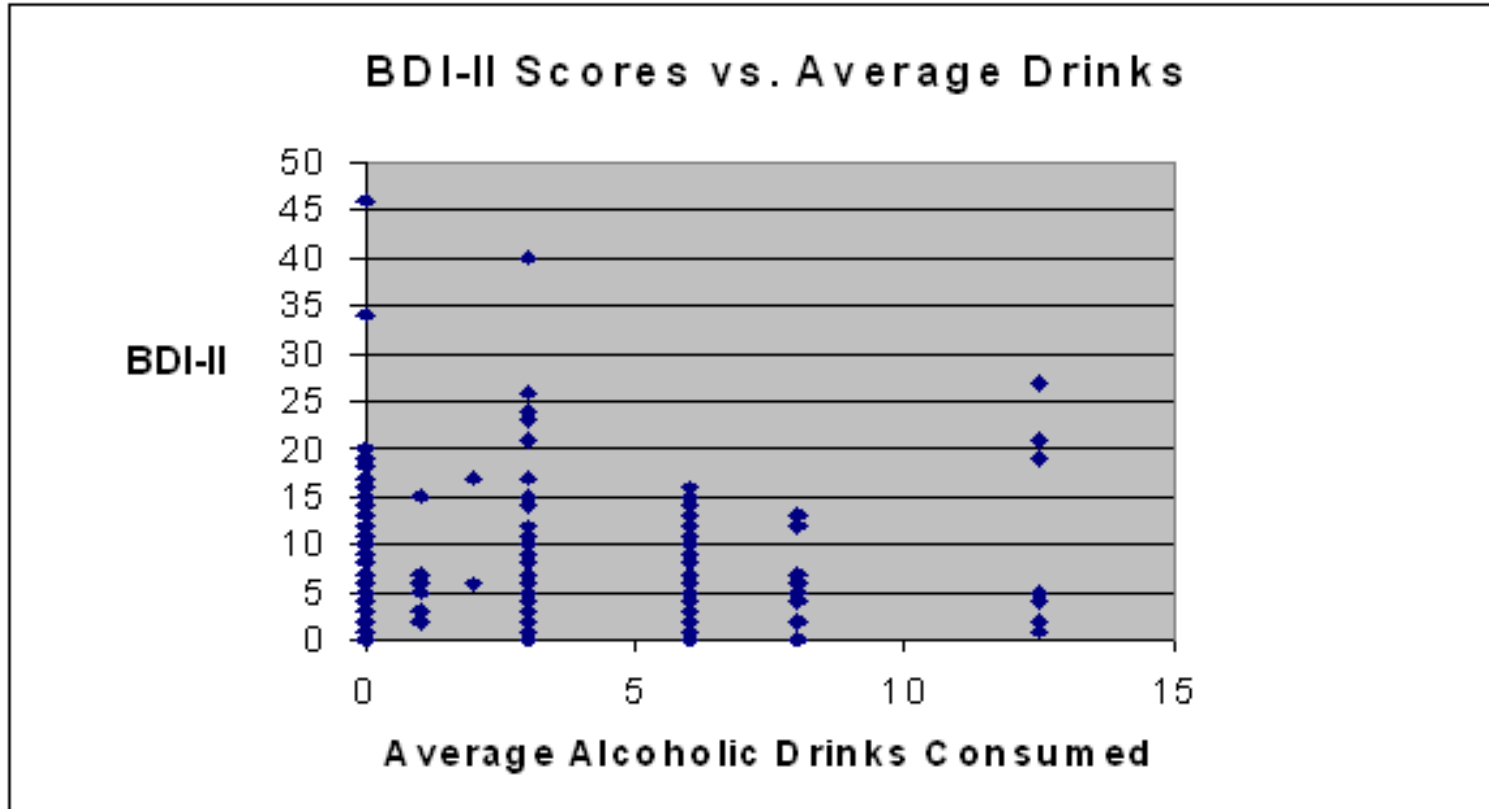
- 17% of participants had scores indicative of symptoms of depression.
- 11% of the survey population had been diagnosed with depression.
- 16.2% of participants diagnosed with depression are still registering as severely depressed on the BDI-II scale.
- 14% of students who are experiencing symptoms of depression according to the Beck Depression Inventory-II scale have not been diagnosed with depression.
- 26% of those registering as depressed on the BDI-II scale report binge drinking in the past 30 days
- 40% of those registering as depressed on the BDI-II scale report drinking on at least 4-7 days over the last 30 days.
- **Only 13% of those with depressive symptoms as scored by the BDI-II engage in frequent binge drinking.**

Discussion

	National Results 2004 N=24,804	Core Survey 2005 N= 33,379	ACHA- NCHA 2004 N=491	ACHA- NCHA 2005 N=448	Current Data 2008 N=260
Diagnosed depression	***	***	13%	14%	11%
Alcohol use	67%	72.8%	74%	75%	75%
Binge drinking	36%	***	43%	33%	33.8%

Discussion

- 13% of those with depressive symptoms as scored by the BDI-II engage in frequent binge drinking.
- Those with the highest BDI-II scores (correlating to severe depressive symptoms) had not frequently binge drank in the past 30 days.



Discussion

- Logical biochemical interactions indicated a correlation between binge drinking and depression.
- Limitations in sample size
- A non-statistically significant correlation.
- A multitude of influencing factors.
 1. Avoidance of social situations and interactions
 2. Medical recommendations
 3. Multivariate factors influencing depression

Questions and Discussion



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NOTES FOR PRESENTATION:

TITLE PAGE

Between the fall of 2007 and the spring of 2008 I examined a possible correlation between undergraduate binge drinking and the incidence of depression among students at the University of Rochester.

INTRODUCTION SLIDE

I will begin by explaining what it means to binge drink, the affect of alcohol consumption on the central nervous system, and several viewpoints presented by different researchers in regards to binge drinking among undergraduate populations in the US. I will then briefly discuss the illness and incidence of depression among the undergraduate populations, and an overview of the biochemical mechanisms of depression. My presentation will conclude by presenting my hypothesized correlation between alcohol and the illness of depression; data I collected among the undergraduate population at the University of Rochester.

SLIDE 1

The Centers for Disease Control definition of heavy drinking, the definition I chose to use in my research, is the consumption of five or more drinks on at least five occasions each month, when a drink is defined as 6 oz of wine, 12oz of beer, or 1.5oz of 90-proof liqueur. The National Institute on Alcohol Abuse and Alcoholism defines moderate drinking as the average number of drinks consumed daily that places an adult at low risk for alcohol problems.

SLIDE 2

Research has shown that a university environment fosters increased alcohol consumption. Students who reported they drank at least once a month during their final year in high school were over three times more likely to binge drink in college than were students who drank less frequently in high school. These rates are higher than individuals of the same age who do not attend a university, suggesting that specific behaviors and lifestyle of undergraduates within a university population affect the likelihood of alcohol consumption.

SLIDE 3: HARVARD

Research has been extensive in analyzing the behavioral choices of university students. The following studies have examined undergraduate drinking behaviors among undergraduate students at University of Rochester as well as national populations.

The Harvard School of Public Health College Alcohol Study (CAS) is an ongoing survey of over 14,000 students at 120 four-year colleges in 40 states. The CAS examines key issues in college alcohol abuse, including the tradition of heavy drinking on college campuses, the role of fraternities and sororities and athletics, the relationship of state alcohol control measures and college policies to this behavior.

The CAS states that two out of every five young adults in college binge on alcohol, and approximately one out of every four young adults in college drinks at a binge level frequently, bingeing at least 3 times in the 2 weeks before being surveyed.

SLIDE 4: GRAPH

The College Alcohol Study argues despite the fact that college administrators recognize the negative impact of excessive alcohol use among college students little change has been seen in college drinking levels over the last 10 years. This research has shown that rates of binge drinking vary widely across and among colleges (for example, binge drinking rates ranging from 0 percent to 78 percent), but have remained stable within colleges over time. However, there was a 31 percent increase in the number of female binge drinkers in college from 1993 to 2001. The following graph, published by the National Institute on Alcohol Abuse and Alcoholism, is consistent with the findings of the CAS.

SLIDE 5:

The Core Institute of Southern Illinois University is the leading research, assessment and development organization serving alcohol and drug prevention programs. The following statistics are drawn from a sample of about 53 colleges in the United States. In 2003, 74.7 percent of students surveyed reported using alcohol at least once in the 30 days prior to taking the survey. This number was slightly less in 2004 and 2005; seventy two percent and 72.8 percent respectively of students surveyed reported using alcohol at least once in the 30 days.

SLIDE 6

Finally, as we have just seen, the National College Health Assessment (ACHA-NCHA) is national survey collecting information from undergraduate populations including

smoking habits, contraception use, mental health issues, and perceptions of drug and alcohol use.

In 2004, 74 percent of responding students reported consuming alcohol in the past 30 days, and in 2005, 73 percent of students reported consuming alcohol. Another question on the ACHA-NCHA asked students how often they had consumed 5 or more drinks in one sitting in the last 2 weeks. Of the 491 students responding, in 2004, 43 percent of students reported having 5 or more drinks in one sitting on one or more times in the past two weeks. Of the 448 students responding to the question regarding binge drinking in 2005, 33 percent of students reported having 5 or more drinks in one sitting on 1 or more times in the past 2 weeks.

As you can see, from 2004 to 2005, the ACHA-NCHA showed a 10 percent decrease in the number of students who reported binge drinking in the past 2 weeks. Student alcohol use (reported consumption of alcohol at least once over the last 30 days) was consistent from 2004 to 2005 as shown by the ACHA-NCHA and was slightly higher than national data averages of 67 percent in 2004.

SLIDE 7

On the biological level, alcohol is an addictive depressant that slows the activity of the central nervous system. At low doses, alcohol may decrease inhibitions and reduce tensions, while in larger doses it may interfere with a person's motor activity, concentration,

and judgment. One of the most widely used groups of depressants, alcohol is consumed at least from time to time by two-thirds of the population of the United States.

Upon the initial consumption of alcohol, the majority of alcohol is metabolized in the liver; the remainder of the alcohol enters the systemic circulatory system and is distributed throughout bodily tissues. Alcohol is a hydrophobic, lipid- soluble substance and easily passes through the capillary endothelial cell junctions of the blood-brain barrier by transport via the systemic system to the brain.

SLIDE 8

N-methyl-D-aspartic acid (NMDA) receptors are ion channels permeable to sodium, potassium, and calcium. These receptors are also affected directly by alcohol. It is hypothesized that alcohol's intoxicating effects are felt due to the inhibition of the NMDA receptor. Alcohol inhibits the flow of sodium across the neuronal cell membrane and decreases serotonin activity. The binding of alcohol to these inhibitory receptors, similar to the mechanism of popular sedatives such as Valium, may explain alcohol's ability to lessen anxiety and relax the drinker.

SLIDE 10

Now that the details of undergraduate alcohol consumption have been discussed, I will present a basic review of clinical symptoms of depression and its incidence among college populations, before proposing a correlation between alcohol and depression.

The Diagnostic and Statistical Manual of Mental Disorders 4th edition defines depression as a distinct change of mood, characterized by sadness or irritability and

accompanied by at least several psychophysiological changes. For a diagnosis of a major depression, a continuous depressive feeling must also always be present, and at least 5 of the symptoms in this chart must be present during the same 2 week period. These symptoms include depressed mood most of the day, insomnia or hypersomnia nearly every day, and feelings of worthlessness or excessive or inappropriate guilt.

SLIDE 10

In examining the incidence of depression among the undergraduate population, research has shown evidence that the incidence of depression is on the rise in students aged 18-24.

According to the American College Health Assessment, the number of students who reported having ever been diagnosed with depression has increased by 4.6 percent over a four-year time span, from 2004 to 2007. Data collected from 13,500 university students show that nearly 45 percent reported being so depressed that they had difficulty functioning, and 94 percent reported feeling overwhelmed by everything they had to do.

SLIDE 13

Depression follows a parallel path, often appearing in late adolescence while individuals are in high school and worsening during the transition to college. Of the 15 percent of students who reported having ever been diagnosed with depression, 25.2 percent said they are currently in therapy for depression, and 38 percent said they are currently taking medication for depression. Continually, suicide is the second leading cause of death for individuals ages 18-24. The lethality of depression is measurable and is the result of

completed suicide. Research shows that 90 percent of college students who take their own lives have a diagnosable mental illness. The suicidality may be a result of attempted self-treatment for the symptoms of depression.

SLIDE 15

Now to put it all together: Alcohol alters the production and functioning of transmitters such as dopamine, serotonin, GABA, and endorphins. These neurochemical effects contribute to the fact that alcohol consumption can aggravate underlying psychiatric disorders such as depression and schizophrenia. Higher rates of symptoms of depression and anxiety are found during periods of heavy drinking and withdrawal and may contribute to an increased risk of suicide or relapse.

But what is really important is what the consumption of alcohol will do to depression itself. Depression is a complex and widespread affliction of the biological and cognitive being, and a significant number of Americans, a large portion of those being undergraduate students, will suffer from depression in their lifetime. And alcohol itself is a depressant; a drug that enhances the overall inhibitory affect of GABA-nergic receptors in the nervous system. I hypothesized that for someone suffering from a depressive illness, combining alcohol with their symptoms and prescribed antidepressants is detrimental to the treatment and recovery from depression. Because alcohol and depression involve similar mechanisms within the central nervous system, it could be hypothesized that alcohol would only worsens the effects of this condition.

SLIDE 16

This research study that I conducted, through the department of community and preventive medicine and the department of clinical and social psychology at the University of Rochester, examined the interconnectedness of binge-drinking and depression among the college population at the University of Rochester.

I hypothesized increasing rates of binge drinking and diagnoses of depression among college students suggest a correlation between the effects of consistent binge drinking and the illness of depression. The continual consumption of five or more alcoholic beverages in one sitting, at least 4-7 days within a 30 day period, was hypothesized in this study to increase symptoms of depression and to detrimentally affect the recovery from depression once a diagnosis has been established.

SLIDE 17

Undergraduate students were given a 13- page self administered questionnaire that asked about alcohol use, other substance use, current emotions, previously diagnosed medical conditions, and demographic information. In order to properly measure current depressive symptoms among participants, Beck Depression Inventory - 2nd Edition was administered within the body of the questionnaire. The BDI-II is a clinical tool used to determine the severity of depressive symptoms. Prior to receiving the survey, each student was instructed about those conducting the research, the content within the questionnaire, and

the rewards for participating. Students were also instructed to read the provided detailed letter which gave additional information about the content of the survey. Because of the potentially sensitive data revealed within the survey, after completion every participant received information on the University Counseling Center, University Health Service, and suicide hotline information for New York State as well as the US national hotline.

Responses from a sample of 260 students were used in these analyses.

It's important to note that the Beck's score is the dependant variable, because the response is the function between the two possible groups, while the binge drinking is the independent variable. Binge drinking is examined as being an independent factor, while the score of the BDI-II is hypothesized to be dependent on the consumption of alcohol. This research examined these interactions as well as the interaction of someone who is diagnosed with depression, taking prescribed antidepressants, and binge drinking.

SLIDE 18

Of the 260 participants, 33 percent were male and 66 percent were female. Twenty-five percent were freshman, 27 percent were sophomores, 25 percent were juniors, and 23 percent were seniors.

Participants were asked to think back over the last 30 days to report how many days a student consumed alcohol and how many drinks containing alcohol the participant had on a typical day when they drank. Twenty-five percent of students had not consuming alcohol in

the past 30 days, and 75 percent of students surveyed reported consuming alcohol at least once in the past 30 days. 27 of students reported consuming alcohol on 4-7 days, while 13 percent of participants reported consuming alcohol on 8-10 days. And 9 percent of participants reported consuming alcohol over 10 days within the last 30 days. **Most notably, 49.2 percent of students consumed alcohol on at least 4-7 days within the last 30 days.**

The majority of students consumed 2-4 drinks on a typical day when they drank (37 percent). 33.8% reported binge drinking within the last 30 days. Finally, a total of 26.9 percent of participants reported drinking at least 4 days within a 30 day period and consuming five or more alcoholic beverages when drinking, meaning that by my definitions for this study, almost 27% of students binge drank to excess over a 30 day period.

SLIDE 19

When measuring depression, students were scored numerically according to the scale of the Beck Depression Inventory-II. According to the BDI-II, Seventeen percent of participants had scores indicative of depression, the majority of who were sophomores and seniors, while 11 percent of the survey population had been diagnosed with depression. Of important notice is the fact that 16.2 percent of participants diagnosed with depression are still registering as severely depressed on the BDI-II scale. Continually, 14 percent of students who are experiencing symptoms of depression according to the Beck Depression Inventory-II scale have not been diagnosed with depression

Twenty-six percent of those registering as depressed on the BDI-II scale report binge drinking in the past 30 days, and 40 percent on at least 4-7 days over the last 30 days.

However, the notable point is that only 13 percent of those with depressive symptoms as scored by the BDI-II engage in frequent binge drinking.

SLIDE 20

Diagnosed depression rates and binge drinking rates collected from the 260 participants are comparable to data previously collected among local undergraduate populations as well as national averages. Current research has supported binge drinking rates and depression diagnoses among undergraduate populations. The data presented in this table are from the American College Health Association National College Health Assessment survey from 2004-2005, national collected data, and the current local undergraduate populations. The data collected from the University of Rochester are consistent with national and other university populations, suggesting a similar trend in drinking behaviors among the undergraduate population. Collected undergraduate data and ACHA-NCHA data show a decrease in binge drinking by about 10 percent from 2004 to 2005. Upon an initial review, drinking rates seem high for the undergraduate population. But these drinking rates indicated students who consumed alcohol at least once over the last 30 days, which is a wide range of possible consumption.

	National Results 2004 N=24,804	Core Survey 2005 N= 33,379	ACHA- NCHA 2004 N=491	ACHA- NCHA 2005 N=448	Current Data 2008 N=260
Diagnosed depression	***	***	13 percent	14 percent	11 percent
Alcohol use	67 percent	72.8 percent	74 percent	73 percent	75 percent

Binge drinking	36 percent	***	43 percent	33 percent	33.8 percent
Cigarette use	21 percent	16.7 percent	13 percent	13 percent	8.8 percent

Binge drinking rates among university populations range from about 36 percent to 43 percent (national results and current collected data respectively). As previously mentioned, data has suggested that these rates have been consistent throughout the last several years. While these rates are high, and the defined quantity of alcohol suggests alcohol is being consumed at a more excessive rate, this means that about 60 to 70 percent of the undergraduate student population is not choosing to binge drink. The stereotype of excessive drinking among *all* university students does not hold true, and is a cultural misconception that must be worked against. It is often the actions of the minority that reflect on the student population as a whole. These actions influence university administration protocol, which leads to policies designed for a select few. This can be frustrating for students who may wish to visit the library, gymnasium, or dining halls later on the weekend but cannot due to earlier closing hours because of problems caused by a few students who chose to excessively consume alcohol.

Slide 21

It was originally hypothesized that alcohol increases the likelihood of depressive symptoms among students drinking at least 4-7 days within a 30 day period and consuming five or more alcoholic beverages when drinking. However, only 13 percent of those with depressive symptoms as scored by the BDI-II engage in frequent binge drinking. Those with the

highest BDI-II scores (correlating to severe depressive symptoms) had not frequently binge drank in the past 30 days. Additional statistical analysis shows no association between frequent binge drinking and an increase of depressive symptoms as described by the BDI-II.

This table described proposed correlation between the average number of drinks consumed on the x-axis and the BDI-II scores on the y-axis. In order to see a correlation, there should be a positive upward trend of data. It was expected to see students with a low BDI-II score consuming the least alcohol, and then an increase of BDI-II scores with an increase of alcoholic drinks. The table depicts almost the opposite. The highest recorded BDI-II scores were associated with no or low amounts of drinking, while higher rates of drinking were found to be associated with normal ranges on the BDI-II. This data does not suggest a positive correlation between the frequent consumption of alcohol and depressive symptoms as recorded by the BDI-II.

SLIDE 22

As previous biochemical and psychological data supported the original hypothesis, several different factors must be examined in understanding the results of the collected data. Initial factors could be errors within the sampling. Much larger sample sizes may be needed to determine a possible association between these variables; sample size was a limiting factor in this research. A broad variance between the sample was also limited; there was an even distribution between the classes but students in specific classes (those registering through the SONA system) were targeted for this research.

Secondly, the factor must be addressed that these two factors, among the college population, do not have a correlation. Students who may be suffering from depression may choose to avoid potentially social situations, where drinking on college campuses often takes place. Students diagnosed with depression and prescribed antidepressants may have been advised against consuming alcohol on antidepressant medication, or may have experienced potentiated side effects when consuming alcohol and taking the medication. Students could be following these instructions and choosing not to consume alcohol. It is also possible that lower amounts of alcohol are needed to lead to depressive symptoms among those ranking as depressed on the BDI-II (17 percent of total surveyed population).

The potentially most important reason a correlation was not found between binge drinking and depression is because depression is not influenced by such a singular factor. Awareness rates and levels of detection may have increased in the past decade, and increased rates may be attributed to heightened sensitivity to the illness. As awareness of depression increases among student populations aged 18-24, the factors influencing depression become more widespread and more complex. While this is true in general society, it is especially true within the college population. The multivariate factors influencing depression among the population consist not only of social factors, but also of volatile environments of stress, nutrition, and relationships. The choices influencing why a college student may choose to indulge in alcohol (i.e. for cathartic purposes or for social benefit) may be different than the factors influencing an adult not living a college community.

