

Mental and Physical Health of Youth in Clinical and Community Settings

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Relationships Between Depression and Obesity in Adolescents Participating in NHANES III

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Question

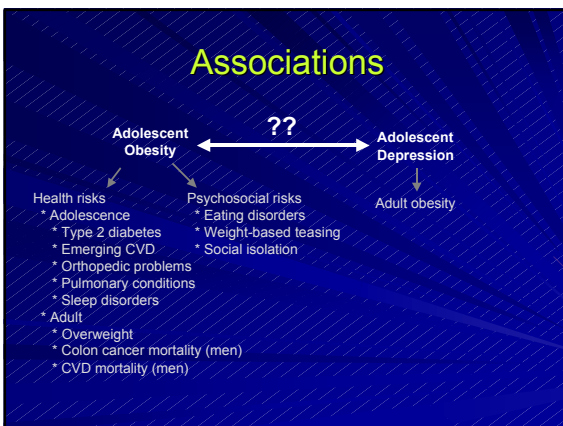
Are overweight youth more likely to be depressed than those who are not overweight, taking into consideration gender and racial/ethnic group?

Epidemiology

10% depressed
Kessler, et al. 1994 – National Comorbidity Survey

10% overweight
Grunbaum, Kahn, Kinchen, et al. 2001 – Youth Risk Behavior Survey

9% attempted suicide
Grunbaum, Kahn, Kinchen, et al. 2001



Obesity & Depression Among Adolescents -- Inconsistent

- Mustillo et al, 2003
 - Rural whites, structured diagnostic interview
 - 4 obesity patterns
 - Not obese
 - Childhood only
 - Adolescent only
 - Chronic (both childhood and adolescent obesity)
 - Both genders
 - Chronically obese boys more likely to be depressed than non-obese (3.72, p<0.01)
 - Association not present for
 - Girls
 - Other obesity patterns

Obesity & Depression Among Adolescents -- Inconsistent

- Longitudinal Study of Adolescent Health (Goodman & Whitaker, 2003)
 - Prospective study of role of depression in adolescent obesity
 - > 9000 adolescents, 7th – 12th grades
 - Baseline & 1-year follow-up
 - Depression not associated with obesity at baseline
 - Depression at baseline associated with obesity at follow-up
- No report of consideration of interactions among race/ethnicity, gender, obesity, and depression

Why Worry About It?

- Adolescents at high risk for bad outcomes associated with depression
 - Suicide
 - School violence

If obesity associated with depression

- Opportunities for targeted efforts at prevention
- Address the other psychosocial correlates of obesity in context of possible depression

Current Strategies

- NHANES III, 1988-1994
 - Ages 15-16
 - Exam
 - Measured height and weight → BMI
 - Interview
 - Diagnostic Interview Schedule → DSM-III diagnoses

Current Strategies

- Logistic regression
 - SAS/SUDAAN
- Depressed
 - Major Depression (single or recurrent episodes)
 - Dysthymia
- Overweight
 - BMI \geq 90th percentile for age/gender
 - CDC 2000 growth charts

Sample Characteristics (15-16 years of age)

	Total Sample (n=871)	Depressed (n=67; 7.7%)
Male	415 (47.6%)	19 (28.4%)
Female	456 (52.4%)	48 (71.6%)
White	497 (57.1%)	48 (71.6%)
Non-white	374 (42.9%)	19 (28.4%)
Overweight	274 (34.0%)	25 (37.3%)

Youth, 15-16 years

	Crude OR (95% CI)
Female	2.7 1.1 – 6.7
White	2.8 1.5 – 5.2
Overweight (\geq 90 th percentile)	1.5 0.6 – 3.7

Girls and whites were nearly 3 times more likely to be depressed than their male and non-white counterparts, respectively.

Overweight teens were 1.5 times as likely to be depressed, but the association was not significant.

Females, 15-16 years

	Crude OR (95% CI)	Adjusted OR (95% CI)
Overweight	0.7 0.2 – 2.3	0.8 0.2 – 2.4
White	2.1 0.9-4.7	2.4 1.1-5.3

Overweight girls are less likely to be depressed than girls who are not overweight, holding race constant. Race does not appear to modify the association between weight status and depression.

Males – 15-16 years

	Crude OR (95% CI)	Adjusted OR (95% CI)
Overweight	4.7 1.1 – 21.0	4.3 1.0 – 19.2
White	4.6 1.3 – 15.9	3.7 1.0 – 13.4

Overweight boys are more likely to be depressed than boys who are not overweight, holding race constant. Race does not appear to modify the association between weight status and depression, although white boys are more likely to be depressed than nonwhites, regardless of weight status.

- ### Overall
- In middle adolescence (ages 15-16)
 - Weight status is associated with depression in boys but not in girls.
 - The association is modified by gender, with overweight boys being more likely to be depressed and overweight girls less likely to be depressed.
 - White youths are more likely to be depressed, independent of weight status and gender.

- ### Possible Interpretations
- Statistical anomaly
 - Small cell sizes

- ### Possible Interpretations
- Statistical anomaly
 - Developmental / transitional phase
 - 15-16 years = transition to high school
 - Being overweight is more salient factor for boys at that age than for girls

- ### Possible Interpretations
- Statistical anomaly
 - Developmental / transitional phase
 - Overweight is a marker for some other factor not controlled for in these analyses
 - Chronic illness
 - Demographic characteristic (e.g., SES)
 - Comorbid psychosocial disorder

Possible Interpretations

- Statistical anomaly
- Developmental / transitional phase
- Overweight is a marker for some other factor not controlled for in these analyses
- Biological mechanism operating differently

Possible Interpretations

- Statistical anomaly
- Developmental / transitional phase
- Overweight is a marker for some other factor not controlled for in these analyses
- Biological mechanism operating differently
- Host of other explanations to be explored

Future Directions

To start:

- Additional NHANES analyses
 - Explore other factors that may be associated with weight status and/or depression
 - Explore associations between weight and specific depression questions
 - To identify most predictive questions
 - To explicate gender differences
- Replication in other data

Impact of Mental Disorders on Pediatric Hospitalizations for Physical Illness and Injury



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Background

- Chronic physical illnesses and injuries are associated with emotional and behavioral problems in children and adolescents.
- Potential relationships between acute illness and psychopathology have not been systematically investigated.
- Burden of primary mental disorders in pediatric medical hospitalizations is disproportionately large.
- Burden of comorbid mental disorders in medical hospitalizations has not been examined.

Objectives

- Document the frequency of comorbid mental disorders in hospitalizations for acute and chronic illnesses and injuries.
- Document the impact of comorbid mental disorders on length and costs of hospitalization for acute and chronic illnesses and injuries.

Method

- Database: Agency for Healthcare Research and Quality (AHRQ) Healthcare Cost and Utilization Project (HCUP) Kids' Inpatient Database (KID).
- Target Universe: Pediatric discharges from community hospitals in the United States in 1997.
- Sampling Frame: Discharges of youth 18 and under (weighted N = 6.7 million) from all community hospitals (N = 2521) in 22 participating states.

Method

- Stratification Variables: Hospital ownership/control, bed size, teaching status, pediatric status, rural vs. urban location, and geographic region.
- Sampling Strategy: 10% of normal newborns and 80% of all other discharges of youth 18 and under within each stratum.
- Study Sample: Discharges of youth 6 to 17 years old with a principal diagnosis of any study condition and a secondary diagnosis of any mental or substance-related disorder (weighted N = 1232778).

Method

- Chronic illnesses:
 - Asthma
 - Cystic fibrosis
 - Diabetes, Type I
 - Epilepsy
 - Leukemia
 - Sickle cell anemia
- Acute illnesses:
 - Appendicitis
 - Cellulitis
 - Pneumonia
- Injuries:
 - Burns
 - Fractures
 - Internal injuries

Results

Percent with comorbid disorder

Category	Disorder	Percent
Chronic illnesses	Asthma	3.51
	Cystic fibrosis	5.65
	Diabetes, Type I	8.60
	Epilepsy	23.89
	Leukemia	4.42
	Sickle cell anemia	2.66
Acute illnesses	Appendicitis	1.88
	Cellulitis	4.32
	Pneumonia	6.52
Injuries	Burns	10.31
	Fractures	4.98
	Internal injuries	7.11

Results

Chronic illnesses

	Mean LOS		Mean charges	
	- Comorbid disorder	+ Comorbid disorder	- Comorbid disorder	+ Comorbid disorder
Asthma	2.58	3.08	5519	6958
Cystic fibrosis	10.74	11.86	27504	32043
Diabetes, Type I	2.94	3.80	5238	6372
Epilepsy	3.66	3.93	10928	10010
Leukemia	14.10	27.15	67748	140510
Sickle cell anemia	4.24	8.17	7904	12640

Results

Acute illnesses

	Mean LOS		Mean charges	
	- Comorbid disorder	+ Comorbid disorder	- Comorbid disorder	+ Comorbid disorder
Appendicitis	3.23	3.63	8810	9629
Cellulitis	3.27	3.98	5602	7805
Pneumonia	4.03	5.89	8456	15864

Results

Injuries

	Mean LOS		Mean charges	
	- Comorbid disorder	+ Comorbid disorder	- Comorbid disorder	+ Comorbid disorder
Burns	7.04	11.56	24312	32933
Fractures	3.80	5.97	12852	18902
Internal injuries	5.65	6.44	18208	21375

Conclusions

- Rates of psychiatric comorbidity in pediatric hospitalizations for physical conditions vary widely across conditions.
- Presence of psychiatric comorbidity is consistently associated with increased length of stay and costs of hospitalization for conditions:
 - varying in rates of comorbidity,
 - including acute illnesses and injuries as well as chronic illnesses.

Limitations

- Underascertainment of comorbid conditions due to diagnostic and coding practices.
- Lack of data on illness severity.
- Lack of data on hospital procedures.
- Potential variations dependent on number and type of comorbid disorders.

Closing thoughts

- Emotional and behavioral disorders add significantly to the burden of hospital care for pediatric medical conditions.
- Only a minority of children and adolescents in general community hospital settings have access to specialty mental health care while hospitalized.
- Few medically hospitalized youth with comorbid psychiatric disorders are likely to receive interventions that might result in better outcomes and lower the burden of care.

Relationship Between Chronic Medical Conditions and Mental Health Outcomes in Adolescents

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INTRODUCTION

- Previous research links:
 - Asthma, panic disorder and behavioral problems (Goodwin et al., 2003; Kovacs et al., 2003; Ortega et al., 2002)
 - Allergies, depression and anxiety (Cuffel et al., 1999)
 - Diabetes and depression (Kokkonen & Kokkonen, 1995)
 - Epilepsy and depression (Dunn et al., 1999)

INTRODUCTION

- No studies on rates of comorbid medical disorders among adolescents seeking mental health treatment
- No studies documenting the impact of comorbid medical disorders on severity of symptoms, functional impairment and family impact
- No studies assessing the impact of comorbid medical disorders on mental health outcomes

HYPOTHESES

- There is a high prevalence of comorbid medical and mental health disorders among adolescents seeking mental health treatment.
- Comorbid medical and mental health disorders are associated with more severe problems at baseline.
- Comorbid medical and mental health disorders are associated with poorer mental health outcomes.

PARTICIPANTS

- 256 adolescents recruited from 2 outpatient and 5 inpatient treatment sites
- 11-17 years
- Exclusion criteria: psychotic, mentally retarded
- Adult informant in contact with adolescent for at least 6 months

INSTRUMENTS

- Adolescent Treatment Outcomes Module (Robbins et al., 2001)
- Child Health Questionnaire (Landgraf et al., 1996)
- Child Behavior Checklist/Youth Self Report (Achenbach, 1991)
- Burden Assessment Scale (Horwitz & Reinhard, 1996; Reinhard, 1994)

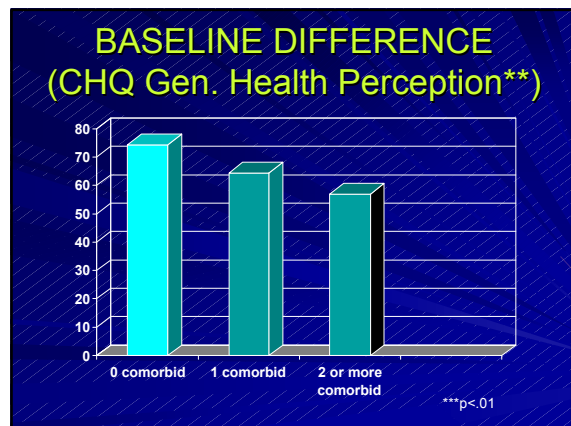
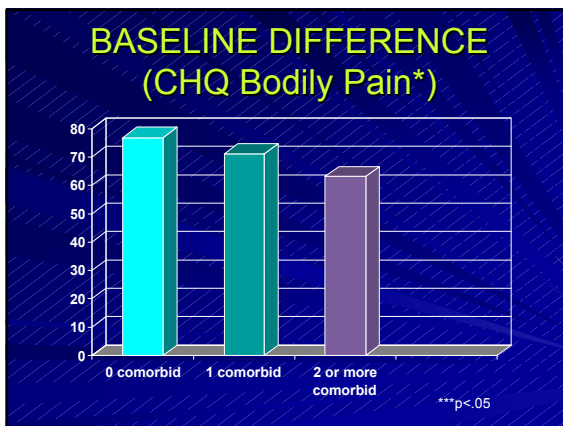
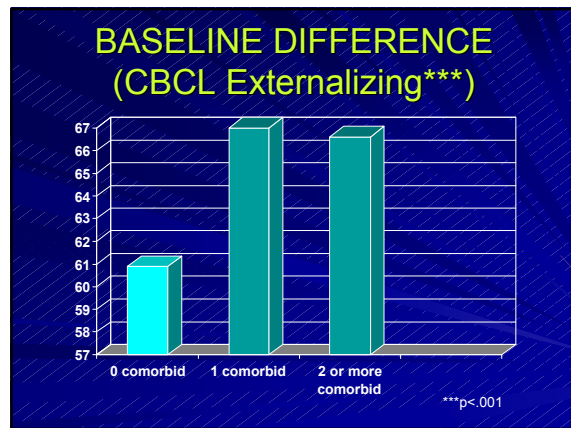
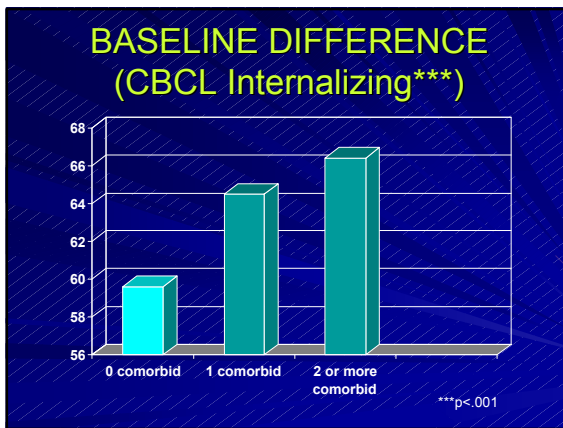
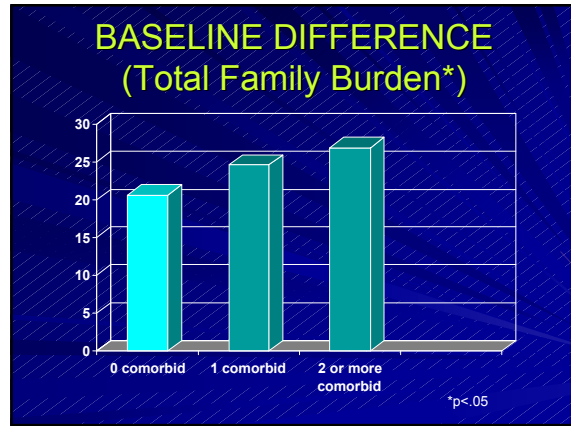
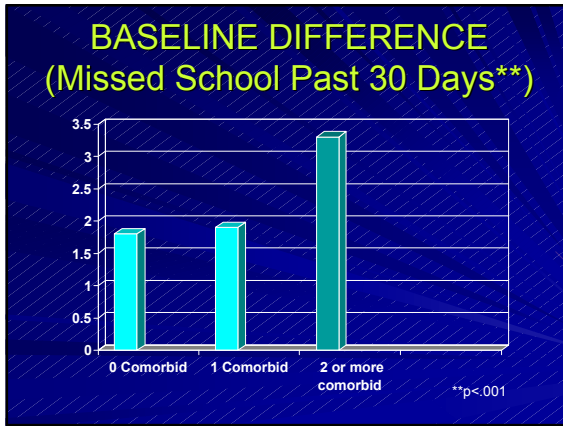
RESULTS

- Majority were male (56%) and Caucasian (65%)
- 50% household income <\$20K
- 71% living in urban areas
- Female and rural-dwelling adolescents more likely to complete follow-up

RATES OF COMORBID MEDICAL CONDITIONS

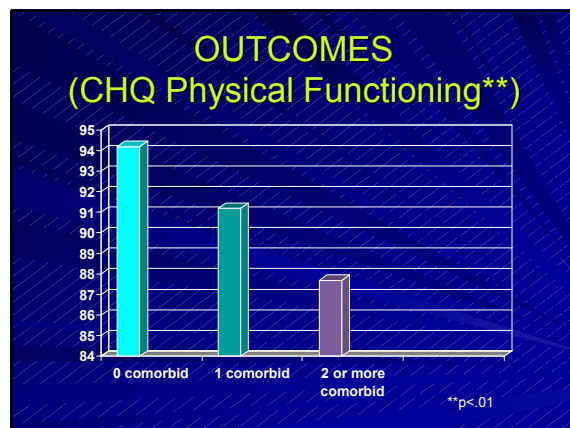
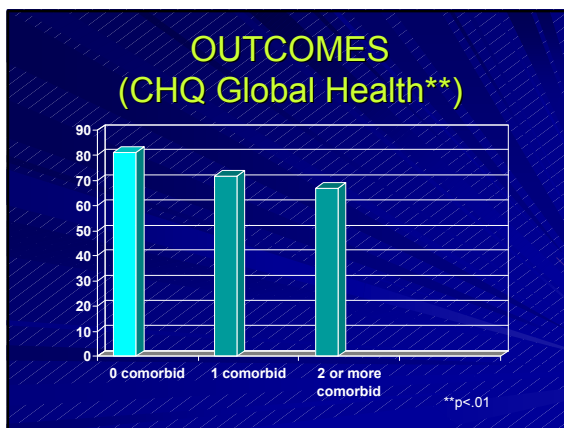
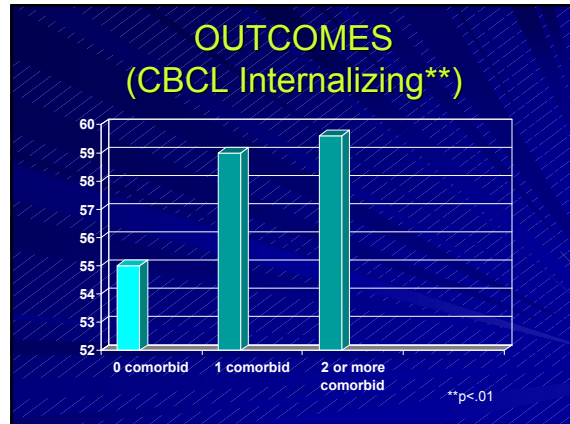
	Total (N = 256)	Only One Medical Condition (n = 79)	Two or More Medical Conditions (n = 52)
Asthma	58 (22.7)	26 (32.9)	32 (61.5)
Chronic Allergies	70 (27.3)	26 (32.9)	44 (84.6)
Chronic Orthopedic	14 (5.5)	4 (5.1)	10 (19.2)
Chronic Respiratory*	6 (2.3)	0 (0.0)	6 (11.5)
Chronic Rheumatic Disease	1 (0.4)	1 (1.3)	0 (0.0)
Diabetes	4 (1.6)	2 (2.5)	2 (3.9)
Epilepsy	11 (4.3)	4 (5.1)	7 (13.5)
Heart Disease	15 (5.9)	4 (5.1)	11 (21.2)
Migraines	23 (9.0)	11 (13.9)	12 (23.1)
Other	5 (2.0)	1 (1.3)	4 (7.7)

Note. Data presented are frequencies and percentages of column category.
Excludes asthma



BASELINE DIFFERENCES (Non-Significant)

- ATOM symptom severity (adolescent report)
- ATOM functional impairment (adolescent report)
- YSR internalizing and externalizing
- CHQ global health, physical functioning, social limitations



OUTCOMES (Non-Significant)

- Missed school days
- ATOM symptom severity and functional impairment
- Total family burden
- CBCL externalizing
- YSR internalizing and externalizing
- CHQ social limitations
- CHQ bodily pain and discomfort

CONCLUSIONS

- Half of adolescents seeking mental health treatment had 1 or more chronic medical conditions (1/2 asthma and/or allergies).
- Rates of comorbid medical disorders were higher than the general population.
- Comorbid medical conditions are associated with higher reports of emotional/behavioral symptoms and health-related problems at baseline, based on parent report.

CONCLUSIONS

- Comorbid medical disorders are associated with greater family impact at baseline.
- Comorbid medical disorders are associated with poorer adolescent physical health and higher internalizing symptoms based on parent report.

IMPLICATIONS

- Provides evidence of the need for:
 - More effective screening and assessment tools in mental health
 - Interventions that address medical complications/conditions
 - Integrated, coordinated care across systems
- Indicates potential research areas:
 - Prospective studies on interaction between emotional/behavioral and medical problems and treatment interventions (e.g., medications)
 - Effectiveness of psychosocial interventions on health-related outcomes and family impact