ADOLESCENT DISORDERED EATING BEHAVIOURS AND ATTITUDES IN A LOW-MIDDLE INCOME COUNTRY

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**Purpose:** Disordered eating behaviours and attitudes (DEBA) among adolescents are increasing globally as social and cultural boundaries fade. These concerns are extending to developing countries, causing concern internationally for health care providers. Jamaica, like other low to middle income countries is faced with the potential health burden which is further compounded by minimal local research in this area. The aim of this study was to determine the prevalence of DEBAs in Jamaican adolescents and identify the associated risk and protective factors.

**Methods:** A representative sample of adolescents age 11-17 years were selected from 15 high schools in the country’s metropolis. Participants were asked to complete a socio-demographic questionnaire, the Rosenberg Self-Esteem scale, EAT-26 scale as well as the Parent and Peer Attachment Scales. Weight, height and waist circumference were also measured. Analyses included using the Chi squared test to determine bivariate relationships between gender and socio-demographic and behavioral factors. Student’s t-test was used to determine relationships between significant EAT-26 scores and continuous variables. Logistic and univariate regression analyses were done to explore associations between risk and protective factors and DEBAs.

**Results:** 524 participants were surveyed (44% males; 56% females) with a mean age of 14.9 years. Just over 75% of participants had normal nutritional status as determined using BMI, 10% were underweight and 13.4% overweight or obese. Most adolescents liked their bodies (50.1%) but more females wanted to lose weight compared to males (32.3% vs 19%) while 50% of males wanted to be more muscular. Approximately 23% of participants had EAT-26 scores \(\geq 20\) with bingeing being the most common DEB reported. Factors that increased the odds of a significantly higher EAT-26 score included being female (OR 2.03, 95% CI 1.31-3.13; p<0.01), a history of sexual abuse (OR 2.93, 95%CI 1.54-5.54; p<0.01) and higher negative affect scores (OR 1.14, 95% CI 1.08-1.19; p<0.001). Protective factors included living with father which halved the odds of being ‘at risk’ of an eating disorder.

**Conclusions:** Jamaican adolescents display similar frequencies of disordered eating behaviours to that seen internationally. This is particularly interesting in a predominantly Black population where the full-bodied figure for women has long been considered preferable and with as many as half of adolescents being satisfied with their bodies. Males have not been routinely considered when exploring body dissatisfaction previously in this setting. This suggests a changing phenomenon in the younger generation, perhaps as the ease of communication with and exposure to influences from neighboring North America may be changing the internalized preferences of Jamaican adolescents. This data positions disordered eating behaviours as a relevant health concern in both male and female Jamaican adolescents that local clinicians, public health researchers and social scientists must now pay close attention to.
Sources of Support: We acknowledge the support of the Caribbean Public Health Agency in funding this research.

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**ADOLESCENTS WITH HIGHER HISTORICAL WEIGHTS PRESENT WITH GREATER WEIGHT LOSS AND LOWER HEART RATE UPON HOSPITALIZATION FOR ANOREXIA NERVOSA**

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**Purpose:** An increasing number of adolescents are presenting with malnutrition at higher weights and can be diagnosed with Anorexia Nervosa (AN) or atypical AN by DSM-5 criteria. Assessment of malnutrition currently relies on body weight at presentation; lower weight is equated with greater malnutrition. However, a recent study highlighted the medical severity of patients presenting near normal weights after losing 25% of body mass. The purpose of the present study was to examine the relationship between percent of weight loss, weight at presentation and heart rate (HR) in adolescents hospitalized for malnutrition secondary to AN.

**Methods:** Retrospective chart review including 152 adolescents age 10-22 admitted to hospital for AN, bradycardia, dehydration, hypokalemia, hypothermia and/or hypotension between March 2002 through June 2012. Weight history, anthropometrics and HR by continuous cardiac monitoring were collected from the first 48 hours of admission. We excluded 51 participants due to missing weight histories. Percent Median Body Mass Index (%MBMI) was calculated using 2000 CDC data. Historical %MBMI was defined as %MBMI at reported highest body weight in Kg (HBW); % body mass loss (%BML) was calculated as the difference between HBW and admission weight divided by HBW. We summarized weight and compared two groups based on historical %MBMI using t-tests: Higher Weight (“HW”, historical %MBMI>100) and Lower Weight (“LW”, historical %MBMI<100). We examined the relationship between %MBMI at admission, %BML and HR with multivariate linear regression.

**Results:** Participants were 101 adolescents mean (SD) age 15.8(2.65) presenting at 81.9(11.93)% MBMI. Historical %MBMI was 118.1(17.2)% in HW and 91.4(6.0)% in LW (p=0.000), occurring 11.6(10.4) vs. 9.1(7.5) months before hospitalization (p=0.176). LW presented at lower %MBMI [88.5(11.7) vs. 75.8(8.4), p<0.001]. However, HW lost more weight [24.4(9.1) vs. 17.0(8.3) %MBMI, p<0.001] at a faster rate [2.06(1.42) vs. 1.51(1.21) kg/mo, p=0.42]. Both groups were bradycardic within 48 hours of admission, however lowest HR recorded (including nighttime) was significantly lower in HW [44.7(8.7) vs. 50.5(15.4) BPM, p=0.032], with a tendency toward lower daytime lying HR [49.6(10.4) vs. 56.3(17.8) BPM, p=0.089]. In a multivariate model, %BWL (not %MBMI upon admission) was associated with lowest 48-hour HR (β = -0.398, 95% CI -0.833, -0.062, p=0.021).

**Conclusions:** Patients hospitalized with AN who began at higher weight (BMI above median) lost a larger percentage of weight faster and presented to hospital with lower HR than those beginning at lower weights (below median). Percent weight loss was a better predictor of the degree of bradycardia than %MBMI upon admission. This finding that supports the clinical utility of HR to indicate of degree of
malnutrition in patients with AN presenting at higher weights. Further studies are needed to determine the impact of magnitude and rate of weight loss on malnutrition and medical instability.

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**THE ASSOCIATION OF REFEEDING CALORIE LEVEL AND RECOVERY OVER ONE-YEAR FOLLOW-UP IN ADOLESCENTS WITH ANOREXIA NERVOSA**

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**Purpose:** We previously reported faster weight gain and shorter hospital stay in adolescents with anorexia nervosa (AN) starting on 800-1200 vs. 1400-2400 calories per day. Other studies support this finding that higher calorie refeeding speeds hospital recovery. However, the long-term impact is unknown. The purpose of this study was to examine the relationship between calorie prescription in hospital and one-year recovery in adolescents with AN.

**Methods:** Follow-up data on our longitudinal, observational cohort Study of Hospitalized Adolescents with Anorexia Nervosa (SHAAN) was gather via retrospective chart review. Patients age 9-20, hospitalized for the first time with AN from 2002-2012 were eligible. Refeeding with 3 meals and 3 snacks (no enteral feeding) was prescribed in a range of calories from 800-2400 cal/d on Day 1 and increased by 200 cal every other day. Study groups were defined by Day 1 calories in quartiles. Weight was measured daily in hospital until Day 14 and collected from outpatient medical records at 1, 2, 3, 4 wk and 3, 6, 9, 12 mo after discharge. Percent median BMI (%MBMI) and expected height were calculated using CDC data. We examined 12-mo trends in %MBMI among calorie groups with mixed effects (log scale, N=54 with ≥14 d follow-up); proportion of follow-up days hospitalized with Negative Binomial (NB) models (N=50 with ≥28 d follow-up); and time to readmission with survival models.

**Results:** Adolescents were mean(SEM) age 16.2(0.3). Upon admission, admit %MBMI was not associated with calorie group (Kruskal-Wallis p=0.40; n=56). Through Day 14, median(min,max) %MBMI increased from 80.1(53.0-103.1) to 84.9(60.0-116.3)%, at a faster rate in higher calorie groups (p=0.033). Through 12-mo, there was no association between %MBMI and calorie group (N=54; median follow-up, 270 days), adjusted for %MBMI at admission, 14-day change in %MBMI, and interactions among covariates. However, calorie group was associated with rehospitalization: between the lowest and highest calorie groups, mean(SEM) readmission rates were 8.8% vs. 4.2% (hazard ratio, 0.85(95% CI 0.27-2.7); logrank p=0.78) at 3 mo and the mean difference in total days readmitted over 12-mo was 6.5 days.

**Conclusions:** This is the first study to examine 1-yr recovery in adolescents with AN refed on varying calorie levels in hospital. Although we did not observe a difference in weight recovery, participants refed on higher calories were readmitted later and spent fewer total days readmitted to hospital over 1-yr. Longitudinal, prospective studies are needed to confirm these observations and examine the risk:benefit of higher calorie refeeding in AN.
AN INTERVENTION FOR LOW-INCOME ADOLESCENTS AND YOUNG ADULTS IN EMPLOYMENT TRAINING PROGRAMS REDUCES DEPRESSIVE SYMPTOMS AND IMPROVES COPING STRATEGIES

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Purpose: Our primary objective was to examine the effectiveness of a multi-component mental health intervention integrated in an employment training program. The intervention was aimed at reducing depressive symptoms and improving engaged coping strategies among low-income adolescents and young adults ages 16-22. We also examined whether intervention effects varied by gender. The number of adolescents and young adults neither connected to school nor the workforce is estimated to be nearly 6 million. Consequently, a growing number of employment training programs have been developed to place these youth on a more positive life course trajectory. However, mental health concerns among adolescents and young adults in employment training programs are prevalent and pose a barrier to achievement of key program milestones (e.g., educational advancement, employment). This study is the first to rigorously assess the effectiveness of a mental health intervention for adolescents and young adults in employment training programs.

Methods: A quasi-experimental study was conducted; adolescents and young adults from one employment training program site were intervention participants, while youth from a second site using the same program model were enrolled as comparisons. Study recruitment occurred between September 2008-May 2012. Baseline assessments were conducted at the time of employment training program enrollment via an audio computer assisted self-interview. Follow-up data collection occurred 6 and 12 months after recruitment. 782 youth newly enrolling in the employment training programs ages 16-22 and not in foster care were recruited for study participation (N = 270 comparison; N = 512 intervention). Propensity score matching adjusted for observed baseline differences between intervention and comparison groups. Primary outcomes were depressive symptoms measured by the CES-D and engaged coping skills measured by the Children's Coping Strategies Checklist.

Results: Intervention males with high baseline depressive symptoms exhibited a statistically significant decrease in depressive symptoms at 12 months (95% CI = -9.58, -9.68; p = .019) compared to similar men in the comparison group. A dosage effect was observed at 12 months post-intervention, whereby men with greater intervention exposure showed greater improvement in depressive symptoms compared to similar men with lower intervention doses. Intervention men and women were more likely than comparison group participants to increase their engaged coping skills, with statistically significant differences found for men at 6 months and for women at 12 months.

Conclusions: This study suggests that interventions for adolescents and young adults provided in
employment training programs can be effective in reducing depressive symptoms and improving engaged coping strategies. Given the growing number of adolescents and young adults using such programs and the mental health needs of this population, increased efforts should be made to deliver mental health interventions in these settings that usually focus on academic and job skills. Ways to extend intervention impact for females and those with less depressive symptomatology at program enrollment should be explored.


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**IMPACT OF VIOLENCE RISK ON ADOLESCENT PHYSICAL AND MENTAL HEALTH**

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**Purpose:** To determine whether violent behavior or risk for future violence perpetration is associated with mental and physical health problems.

**Methods:** As part of a community based intervention to decrease the prevalence of violence, a community based survey exploring multiple violence characteristics was conducted prior to the introduction of evidence-based programming. All youth living in the households of the identified high risk communities were eligible to participate. Surveyors hired by the University went door-to-door to invite youth and their parents to participate. The survey was conducted in a confidential setting, with the questions asked orally by the surveyors and recorded on a computer. The Violence Injury Protection and Risk Screen (VIPRS) – predicting future violence perpetration, as well as standard violence measures- perpetration, victimization, dating, and delinquency- were administered. Health and wellness measures, including assessment of overall health, presence of chronic illness, the Strength and Difficulties Questionnaire (mental health screen), and specific mental health diagnoses were also collected. Chi-square analysis determined which health and wellness outcomes were associated with a positive VIPRS score or current violent behavior. Logistic Regression determined which factors influenced the outcomes of interest. The study was approved by the University of Colorado IRB.

**Results:** 1203 youth were eligible, with 1100 youth participating (91% participation). Demographics: 53% female, 45% Hispanic, 25% Black, 26% mixed/other. 20% of youth scored + on the VIPRS screen. Older youth age 13-17 had a higher rate of a VIPRS + screen compared to younger age (10-12): 25.8% vs. 11.0% (p = .000). Males-27.8%- were more likely to be VIPRS + than girls-13.3% (p=.000). Race/Ethnicity was not associated with a + VIPRS screen. We found significant associations between VIPRS risk and nearly all health outcomes. VIPRS + youth evaluated their general health as worse than VIPRS – youth, 50% vs 4% (p<.05). VIPRS + youth were more likely to suffer from asthma, migraines, concussions, and STIs. VIPRS + youth were more likely to experience food insecurity, and a range of mental health issues (41.2% vs. 15.9%, p=.000) including depression, anxiety, ADHD, and PTSD.
Multiple logistic regression models showed that being VIPRS + was the strongest predictor of negative health outcomes: being female also contributed to worse outcomes, while being Hispanic was protective against worse health outcomes.

Conclusions: Screening positive for future violence risk is strongly associated with multiple physical and mental health conditions. Though this study is cross-sectional, these results indicate that when using the 14 item Violence Injury Protection and Risk Screen, those youth scoring in the risk range are at higher risk of physical and mental health issues than youth who are not at risk for future violence. The association with several medical health outcomes suggests that there is likely a biologic underpinning between the violence experience and impact on an individual’s health, whether it be stress, or other factors.

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CAN POSTGRADUATE EDUCATION IN YOUTH HEALTH FOR HEALTHCARE PROFESSIONALS IMPROVE THE HEALTH OUTCOMES OF SECONDARY SCHOOL STUDENTS?
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Purpose: Many clinicians who work with adolescents feel inadequately prepared to care for their unique psychosocial and health needs. In New Zealand, training in youth health is generally limited to a single, one to two hour session for undergraduate students in medicine and nursing and one-off community training sessions on an ad-hoc basis. Post-graduate training in youth health is available, but only one university in New Zealand offers it. Despite the limited training opportunities, there is a growing workforce in school-based health services in New Zealand. It is unknown how many of the school nurses and doctors have had postgraduate training in youth health. Moreover, there is no evidence of the effectiveness of specialised training in youth health on health outcomes among young people. The aim of these analyses is to examine the relationship between school health services provided by clinicians with specialised youth health training and the health of high school students in New Zealand.

Methods: Data were collected as part of Youth’12; a nationally representative sample of 8500 high school students who participated in a youth health survey in 2012. Additional data were collected from 90 of the 91 participating schools through a survey of school health professionals, which included questions on their level of training in youth health. Multilevel models accounting for demographic characteristics of individual students were used to estimate the association between school health clinicians’ training in youth health and health outcomes among students. Outcome measures included overall emotional and behavioural difficulties, depression symptoms, suicide risk, substance use and contraception/condom use.

Results: Most schools (n=54, 60%) had health professionals with some training in youth health (study days, on-off lectures, informal teaching); 10 schools (11%) had health professionals with postgraduate education in youth health; 9 (10%) schools had no information on the level of training of their health
professionals; 6 schools (6.7%) had health professionals with no training in youth health, and 11 schools had no health services. Nurses were more likely than doctors to report post-graduate training in youth health ($p< 0.001$). Students in schools where the clinicians had post-graduate training in youth health were less likely to report emotional and behaviour difficulties ($\beta=-0.765$, $p = 0.003$), significant depression symptoms ($\beta=-0.21$, $p = 0.01$), suicide risk ($\beta=-0.053$, $p=0.039$), and binge drinking($\beta=-0.29$, $p=0.035$) than students from schools where school health clinicians had not completed post-graduate papers in youth health or had no health services. There were no significant associations between cigarette, marijuana, or contraception use among students and specialised training among clinicians in their schools’ health service.

**Conclusions:** Postgraduate training in youth health among clinicians in school health services is associated with better health outcomes among students. These findings support specialised training in youth health for clinicians working predominantly with young people.

**Sources of Support:** Youth’12 was funded by the Ministries of Youth Development, Social Development, Health, Education, Justice; the Department of Labour, Families Commission; and the Alcohol Advisory Council.