## “Disordered Eating Behaviours and Attitudes among Adolescents

with Overweight/Obesity in the Paediatric Outpatient Clinics at UHWI”.

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# Introduction

Globally, the prevalence of disordered eating behaviours and attitudes (DEBAs) over the past two decades has been increasing (1) as has the prevalence of overweight/obesity. This is cause for concern for healthcare providers (HCPs) who manage patients with these concerns considering the comorbidity that exists between DEBAs and overweight/obesity, with implications for weight management for persons living with overweight and obesity.

The broad approach to weight management in adolescents living with overweight and obesity typically involves reduced energy intake and increased exercise which may not be ideal for those clients who may also suffer from DEBAs and significant body dissatisfaction.

Without a good understanding of how obesity and disordered eating interact, medical providers may continue to focus primarily on obesity treatment (2) while inadvertently neglecting the management of DEBAs. The typical weight management strategies utilised by HCPs may in fact trigger DEBAs in adolescents with overweight and obesity, by contributing to internalized weight bias(2), thus negatively impacting their health outcomes, an unintended consequence.

Further, the low awareness of DEBAs by HCPs in general may result in infrequent screening and missed opportunities to identify them among young persons with overweight/ obesity. Lack of training in the assessment of adolescents for DEBAs may also contribute(3). Nagata et al found that persons with increased adiposity are half as likely as individuals with average or below average Body Mass Index (BMI) to be diagnosed with an eating disorder (ED) (4). Some physicians have admitted to feeling hesitant to approach the subject of EDs with their patients, allowing biases related to a patient’s body size/shape to influence perceptions about eating behaviours(2). However, if DEBAs are not identified, appropriate weight management strategies are less likely to be instituted.

A better understanding of the relationship and correlation between DEBAs and overweight/obesity is critical to direct the implementation of the most appropriate weight management techniques and achieve the best outcomes for adolescents with overweight/obesity.

# Literature Review

Overweight and obesity are common disorders seen in the paediatric population. Overweight in children and adolescents is defined as a body mass index (BMI) value between the 85th and 95th percentiles for age and sex, while obesity in is defined as a BMI at or greater than the 95th percentile for age and sex (5). The BMI is calculated as weight in kilograms divided by (/) height in metres squared (5). (see Appendices 1 & 2).

The severity of obesity can be classified using thresholds below (6):

Class I – BMI ≥95th percentile for age and sex, or BMI ≥30 (whichever is lower).

Class II – BMI ≥120 percent of the 95th percentile values or a BMI ≥35 kg/m2, whichever is lower. This corresponds to approximately the 98th percentile.

Class III obesity – BMI ≥140 percent of the 95th percentile values or a BMI ≥40 kg/m2

Recent studies have demonstrated other anthropometric indices, including the waist circumference to height ratio, to be a good measure of obesity, where a cut-off value of 0.5 is recommended as a marker for screening for central obesity in children and adolescents(7, 8).

In 2016, the World Health Organization reported that globally, over 340 million children and adolescents, aged 5-19 years, had overweight or obesity, using the following WHO definitions for overweight and obesity(9):

Overweight: BMI (kg/m2) for age greater than one standard deviation above the WHO growth reference median (see Appendices 3&4)

Obesity: BMI (kg/m2) for age is greater than 2 standard deviations above the WHO growth reference median.

Using the Centers for Disease Control and Prevention (CDC) classification, the prevalence of obesity in US children and adolescents aged 2-19 years in 2017-2020 was approximately 14.7 million. The prevalence was shown to increase with age: 12.7% for children 2- to 5-years-old, 20.7% among 6- to 11-year-olds, and 22.2% among 12- to 19-year-olds(10).

In the European Union ( EU), an increase has been noted across EU countries over time - in 2010, one in six (16%) adolescents were found to have overweight or obesity, and this rate increased in 2018, with one in five (19%) 15-year-olds having overweight or obesity. A three-fold variation in the prevalence of overweight and obesity among adolescents was noted across EU countries, ranging from 12% in the Netherlands to 36% in Malta(11).

In 2016, on average across high and upper-middle-income Asia-Pacific countries and territories, over one in ten children and adolescents had obesity, which was more than double the prevalence observed across lower-middle- and low-income Asia-Pacific countries and territories.  In New Zealand, where the obesity rate is the highest in Asia-Pacific, the prevalence of overweight was also the highest in the region at almost 40%, whereas in India with one of the lowest obesity rates, the prevalence of overweight was less than 7% (12).

In the Caribbean, in a 2008 study in Bonaire, 14.3% of the boys (aged 4-19 years) and 18.6% of the girls were classified as having overweight, and 9.8% of the boys and 13.0% of the girls with obesity (13). More recently Kist-van Hothe and colleagues reported the prevalence of overweight in children (ages 4-11years) in Bonaire at 14.0 %, obesity at 5.9% and morbid obesity at 3.5 % (14), with even higher prevalence in Puerto Rico during the same era (2014-2017) with 25.7 % of children of adolescents, 5 to 17 years old, assessed with obesity (15).

Locally, there has been an objective increase in the number of overweight individuals over the past several years in Jamaica. The prevalence of overweight and obesity in adolescents (10-19 years) increased from 5% (4.4% boys, 5.5% girls) in 2000 to 11.4% (11.0% boys; 11.9% girls) in 2016 (16). These statistics are concerning, with a doubling of the prevalence of overweight and obesity in under two decades, highlighting the urgent need to address this concern.

Medical complications of obesity in adolescents

Obesity is associated with an increased risk of several physical complications affecting all organ systems (17). In the short term, adolescents have increased risk of respiratory complications such as obstructive sleep apnoea (OSA) and impaired exercise tolerance , endocrine complications such as impaired glucose tolerance , multiple musculoskeletal complaints including pain, acute injuries, impaired balance, coordination and strength (17). Medium term complications include elevated risk of delayed or accelerated puberty, risk of development of gait deviations, fractures, slipped capital femoral epiphysis and Blount’s disease, gastroesophageal reflux disease and constipation, involvement of skin with increased risk of psoriasis, and cardiovascular complications including hypertension (17). Long term complications include increased risk of developing coronary artery disease, infertility, Type 2 diabetes mellitus, and osteoarthritis (17). Obesity has also been linked to increased overall mortality for Alzheimer’s disease, cancer, and heart disease (18). These negative health outcomes further emphasise the need for effective treatment management and should be public health priority.

*Psychosocial impact of overweight/obesity*

In addition to the physical sequelae of obesity, research has uncovered associated psychological and emotional outcomes. Emerging evidence reveals an association between stigmatization of children and adolescents with obesity and detrimental psychological, emotional consequences (19). These include psychosocial impairment, decreased executive function, reduced health-related quality of life, unhealthy weight control behaviours and impaired management of weight (19).

Weight stigma is another factor to consider, whereby adolescents with overweight/ obesity may be excluded or made fun of by their peers which can lead to multiple difficulties. Weight stigma is defined as the attribution of negative beliefs or bias based on weight, which can result in actions taken against the target of the bias (19). Studies report varying levels of weight related teasing, with one study published in 2014 showing that in 20 schools across the United States, 11-36% of students reported weight-related teasing (20). Weight-based teasing has been found to be predictive of emotional eating (21), future bulimic tendencies, as well as a drive for thinness and body dissatisfaction (22), with the potential for the development of other disordered eating behaviours and attitudes .

Mood-related and psychological challenges have also been noted among adolescents with overweight/obesity. Van Wijnen at al found that in a Dutch population-based study of adolescents who responded to a five-item version of the mental health inventory, boys and girls with obesity were more likely to report suicidal thoughts and attempts, and to be classified as psychologically unhealthy when compared to normal weight students(23).

Among these psychological challenges is disordered eating behaviours and attitudes (DEBAs), which may be triggered or exacerbated among adolescents with overweight/obesity due to their body dissatisfaction among other factors (24). Disordered eating behaviours and attitudes refers to a range of irregular eating behaviours and attitudes that may or may not warrant a diagnosis of a specific eating disorder (25). Several terms have been used to capture various forms of DEBAs including ‘loss of control’ eating, a subjective feeling of being unable to stop eating irrespective of the amount of food in question; ‘emotional eating’ - eating as a coping method to deal with negative emotions; ‘external eating’ – a heightened stimulation of senses to environmental food cues leading to food intake; ‘restrained’ eating - a cognitive method of setting limits and boundaries to food intake for weight loss purposes; and ‘hyperphagia’ - a constant state of excessive hunger and associated preoccupation with food seeking (26).

Disordered eating behaviours and attitudes have been shown to be associated with many poor physical and psychosocial outcomes, one of the most significant of these being increased risk for the development of eating disorders (27). The DSM-5 refers to eating disorders (EDs) with primarily restrictive features including avoidant restrictive food intake disorder (ARFID), and anorexia nervosa (AN), or those with involvement of excessive food intake, with and without, compensatory behaviours - bulimia nervosa (BN), and binge-eating disorder (BED) respectively (28).

A systematic review exploring DEBAs among adolescents between 2000 and 2013 in the US, revealed wide ranges of prevalence for purgative behaviours (0–11%), binge-eating (1.2–17.3%), fasting (2.1–18.1%), and dieting (0.6–51.7%) behaviours (29)

A multi-country cross-sectional study involving Caribbean territories (including Antigua, Bahamas, Barbados, British Virgin Islands, Dominica, Grenada, Guyana, Jamaica, and St. Lucia) was able to identify the prevalence of DEBAs, including dissatisfaction with weight (girls 27.0%; boys 19.9%; p < 0.001), laxative use (boys 10.9%; girls 9.5%; p < 0.01), and other purging behaviours including use of diuretics (boys 3.3%; girls 2.5%, p<0.01) and self-induced vomiting (boys 6.6%; girls 5.4%; p < 0.01) (30).

Locally, Harrison and colleagues, reports 31% of Jamaican adolescents, 11-19 years, reporting having engaged in at least one DEB, with bingeing being most common. Additionally, adolescents with overweight/obesity reported higher use of chemical weight manipulation (laxatives, diuretics, and diet pills; p = 0.01) (31).

*Co-occurrence of Overweight/Obesity and disordered eating behaviours and attitudes (DEBAs)*

In 2004 Kalarchian et al found that ‘loss of control’ eating was more prevalent in overweight children and was associated with more maladaptive cognitions related to eating, shape, and weight. In a Canadian sample of 3,043 adolescents, the prevalence of estimated sub-threshold or fully classified EDs was higher in adolescents with obesity (9.3% males; 20.2% females) compared to those with healthy weight (2.1% males; 8.4% females) (32).

In 2012, Veses et al conducted an analysis of two cross sectional studies in Spanish adolescents: one focused on nutritional status (AVENA study) and the other on the role of physical activity in preventing overweight/ obesity among other disorders (AFINOS). The analysis demonstrated that adolescents with overweight were at a higher risk of developing eating disorders than those with a healthy weight (odds ratio [OR] = 4.91, 95% confidence interval [CI]: 3.63–6.61 in the AVENA Study and OR = 2.45, 95% CI: 1.83–3.22 in the AFINOS Study) (33).

Established obesity treatment guidelines highlight the need to screen for eating disorders as a routine part of care and conversely eating disorder treatment guidelines acknowledge the high prevalence of comorbid obesity and eating disorders (34). In a 2018 literature review of existing guidelines regarding the assessment and treatment of childhood overweight/ obesity, 9 of 17 analysed guidelines recommended screening for eating disorders as part of initial assessment (35).

Unfortunately, DEBAs may often be missed in healthcare settings for various reasons including lack of training(3). Healthcare professionals (HCPs) may not see the relevance of same, as the role of DEBAs in the aetiology of paediatric obesity can be overlooked, given that the current public health narrative on obesity mostly focuses on nutritional intake and environmental factors (36). Furthermore, literature regarding disordered eating often addresses clinical threshold EDs and does not often consider sub-threshold disorders, where DEBAs do not meet diagnostic criteria for an ED (37), with subtle signs being overlooked.

Adolescents may be reluctant to voluntarily divulge symptoms related to DEBs for fear of judgement and reprimand. Kaitz and colleagues demonstrated that American university students avoided discussion of eating and body image concerns because they were not prompted about these issues, and they were uncomfortable discussing those topics if providers seemed non-empathetic(38). Indeed, multiple studies have shown that physicians often feel unprepared to treat DEBAs and EDs once identified, due to lack of training in this area(2), and report feeling hesitant to approach the topic, overlooking or downplaying information shared by patients in relation to their eating behaviours (2).

A 2015 cross sectional study by Loth et al found that although there was significant decrease in the percentage of non-overweight female adolescents engaging in disordered eating behaviours (DEB) between 1999 to 2010, significant decreases were not noted in overweight female adolescents over the same period. Overall findings were not as consistent in males but more significant decreases in DEB were observed in non-overweight male adolescents vs. males with overweight (39). This further highlights the need for targeted intervention towards DEBAs in adolescents with overweight/ obesity.

It is of utmost importance that DEBAs are identified promptly, as early intervention can mitigate progression to an eating disorder which can have significant physical and mental repercussions. Further, the presence of DEBAs may complicate the management of overweight/ obesity and may negatively impact the outcome of treatment. Continuation of routine treatment of obesity in the presence of DEBAs may inadvertently strengthen weight-bias patients may have against themselves and may trigger or exacerbate DEBAs. ~~A better understanding of the spectrum of DEBAs in paediatric patients will allow HCPs to discuss food and physical activity differently and recognise when specialist referral is required (2).~~

*Theories regarding the comorbidity of overweight/obesity and disordered eating behaviours and attitudes*

Various psychological, social, and environmental factors may predispose patients with obesity to develop habits of disordered eating. Jebielle et al stated that environmental factors such as weight teasing and images presented in the media, cognitive factors including shape and weight concerns and body dissatisfaction and behavioural responses to same, including unhealthy weight control behaviours, can all increase the likelihood of disordered eating in patients with overweight/obesity (26, 40, 41).

Johnson et al also noted that factors such as childhood maltreatment , childhood adversities, whether chronic or episodic, and problematic parental relationships were more likely to be reported by individuals with eating disorders and problems with weight in adolescence(42). Neumark et al also found engagement in team sports to be associated with increased risk of eating disorders(43).

Adolescence has been shown to be a time of heightened stress , and many adolescents employ both healthy and unhealthy coping strategies in response (44). Goldschmidt and colleagues reported unhealthy weight control behaviours may be associated with perceived emotional well-being in youth with obesity, with DEBs functioning as a coping mechanism to help modulate negative emotions (24).

Henderson et al reported that adolescents with higher levels of stress tended to engage in emotion-oriented coping, which may lead to higher levels of disordered eating(45).

Parental influence plays a pivotal role in eating patterns developed by children. Parents select the foods in the family diet and serve as role models that their children imitate, both in foods eaten and their behaviours towards foods. Parental control of feeding practices, whether restrictive or providing pressure to eat also affects eating behaviours eventually developed by their offspring, and may play a key role in the development of both DEBAs and overweight/obesity (46, 47).

Jebielle et al posit a genetic influence with possible shared genetic risk factors between obesity and binge eating disorder. It has even been suggested that obesity and eating disorders could be considered on the same continuum of weight related disorders, considering overlapping aetiology as well as psychological and medical comorbidities such as depression (32).

Some adolescents with overweight/obesity may be placed on medications for treatment of various comorbid diagnoses, and these medications may affect appetite and weight gain. Medications linked to weight gain include insulin, sulfonylureas, thiazolidinediones, beta blockers, tricyclic antidepressants, olanzapine , clozapine , valproate , carbamazepine, and corticosteroids (48).

*Impact of co-occurrence of overweight/obesity and disordered eating behaviours*

The co-occurrence of overweight / obesity and DEBAs can have significant health consequences, both psychological and physiological. Some literature suggests that DEBAs in youth with overweight, increase the likelihood of development of eating disorders, as well as other negative psychological sequalae such as depressive and anxious symptoms , low self-esteem and substance use (24). A 2016 study by Fox et al, found that after adjusting for demographics and emotional eating, the odds of having severe obesity vs. obesity were significantly increased for those with depression (odds ratio (OR) 3.5; ninety-five percent confidence interval) and those with anxiety (OR 4.9; ninety-five percent confidence interval.). However, they did not find emotional eating to be a mediator between depression/anxiety and degree of adiposity (49).

Nagata et al demonstrated that young adults with overweight/obesity reporting unhealthy weight control behaviours at baseline had higher BMI and weight at 7-year follow-up than those without unhealthy weight control behaviours (27). Unhealthy weight control behaviours were associated with greater change in BMI in both sexes and binge-eating behaviour at baseline was associated with greater odds of incident hyperlipidaemia (OR 1.90, 95% CI 1.29-2.79) at 7-year follow-up in males (27). Shank et al found that loss of control (LOC) eating or binge eating episodes characterized by high carbohydrate and high fat foods affect conditions such as diabetes, hepatic steatosis and dyslipidaemia, the risk of which developing is already increased by obesity(50).

Conversely, other studies have found rigid food restriction can lead to malnutrition, hair loss, sleep disturbance and worsening mood (51, 52). Furthermore, compensatory behaviours such as excessive exercise and purging may result in electrolyte disturbances and resultant symptoms of varying severity(52).

A missed diagnosis of DEBAs may negatively impact the management of children and adolescents with obesity. Persons living with a comorbid eating disorder (ED) and obesity have poorer physiological and psychological health than those either with obesity or an ED only(34). Early identification of DEBAs is essential to improve prognosis, both of the DEBAs and overweight/obesity in adolescents (53). Once DEBAs are identified, management plans for the adolescent with overweight/obesity may need to be revised to include treatment targeted towards DEBAs and may include referral to an ED clinical team for management. ~~Management options may include behavioural weight loss therapy and cognitive behavioural therapy which have been shown to have some efficacy in adults with overweight/obesity and DEBA comorbidity(54), though further studies and more interventional programmes are needed in children and adolescents (46).~~

# Rationale

The current data available regarding disordered eating in children and adolescents with overweight/obesity mostly originates from studies in developed, high-income countries. The existing literature regarding disordered eating in the Caribbean is limited, and even more so regarding disordered eating in children and adolescents with overweight / obesity.

Local studies have shown both an increase in the prevalence of overweight /obesity in Jamaican adolescents from 27.7 % in 2010, to 32.5% in 2017 (55, 56) as well as an increase in the prevalence of DEBA in adolescents (31) .

There are no prior studies investigating the co-occurrence of DEBAs in Jamaican adolescents with overweight/obesity. The significant role DEBAs may play in the outcomes of management of adolescents with overweight/obesity highlights this as a critical factor to investigate to better guide management of overweight/obesity, a common non-communicable disease (NCD) affecting 1 in 3 Jamaican adolescents. The data garnered from this study may better inform HCPs’ management of adolescents with overweight/obesity.

# **Hypotheses**

We hypothesized that (i) at least 20% of adolescents (10–19 years) with overweight or obesity enrolled in the paediatric endocrine, adolescent, and general clinics at the University Hospital of the West Indies (UHWI) would report disordered eating behaviours and attitudes (DEBAs), and (ii) adolescents with overweight/obesity and concurrent DEBAs would have poorer health outcomes than those without DEBAs— including less reduction in their BMI over the year prior to enrolment in the study, lower self-esteem scores, and a higher prevalence of clinically significant symptoms of anxiety and depression.

# **Aims and Objectives**

**Aim:** To determine the prevalence of disordered eating behaviours and attitudes (DEBAs) among adolescent participants with overweight/obesity in the paediatric outpatient clinics at the UHWI.

Objectives:

1. To determine the proportion of adolescent participants (10-19y) with overweight or obesity, attending the paediatric outpatient clinics (general, teen and endocrine) at UHWI, who report clinically significant DEBAs
2. To examine factors (including sociodemographic factors, adverse childhood events, and coping strategies) associated with co-occurrence of DEBAs in adolescents with overweight/ obesity
3. To compare health outcomes between adolescents with overweight/ obesity endorsing DEBAs with those who do not
   * 1. Change in BMI over the year prior to enrolment in study
     2. Depressive symptoms
     3. Symptoms of anxiety
     4. Self-esteem level
     5. Medical complications of overweight/obesity (including diabetes mellitus, hypertension, hyperlipidemia)

# Methodology

Study setting

The study was conducted at the Paediatric Endocrine, Adolescent, and General outpatient clinics. at the University Hospital of the West Indies (UHWI). The UHWI is a Type A teaching hospital, providing secondary and tertiary health care services and serving as a final referral centre, and the only hospital island-wide with both a Paediatric Endocrinologist and Adolescent Medicine specialist on staff. The paediatric outpatient clinics at the UHWI see patients from birth to 19 years of age from across the island, though predominantly from the neighbouring parishes of Kingston, St. Andrew and St.

Catherine.

### Study design

A cross-sectional study design was utilised, recruiting adolescent patients in the paediatric endocrine, adolescent and general clinics

### Participants

Adolescent patients (ages 10–19 years) with overweight/obesity who attended the paediatric endocrine, adolescent, or general clinics at UHWI were recruited between September 2024 and April 2025.

# Inclusion Criteria

1. Participants must have been registered in the paediatric endocrinology/adolescent/general clinic at UHWI for a minimum of 12 months
2. Participants must have BMI > 85th percentile for age and sex
3. Participants must have signed parental consent and assent or individual consent (18-19y) as appropriate for age

# Exclusion Criteria

1. Adolescents who are wards of the state
2. Adolescents with any comorbid neurological/neurodevelopmental disorder precluding the participant’s ability to answer the survey questions

# Procedure

Following receipt of ethical approval, administrative approval was sought from UHWI to conduct the study in the relevant paediatric outpatient clinics (see Appendices 5a1 and 5b1). Health care providers in the clinics were informed of the study and asked to assist in sensitizing patients.

The clinic staff who were not involved in the study were asked to identify all patients aged 10 – 19 years with a BMI > 85th percentile for age and sex on each clinic day, and inform those patients about the study when they were seen for their visit, and enquire if they were willing to hear more about the study from the researcher(s). Once the parent and patient agreed, the researcher was informed and proceeded to approach the adolescent and their parent/guardian at the clinic.

The purpose and procedure of the study was carefully explained to the parent/guardian and the adolescent by the researcher. Any adolescent in the clinic who was approached was given time to consider the information shared and ask any questions. Potential participants were then allowed to determine if they wished to voluntarily participate in the study. Any questions raised were answered as best as possible. Efforts were taken to ensure neither the parent or adolescent felt pressured or coerced to participate and they were reassured that not participating would not affect their care in the clinic. The researcher explained that participation was voluntary and could be terminated if the participant wished, at any time throughout the course of the study.

Parental consent and participant assent/consent as age-appropriate were obtained by the primary researcher/ researchers as facilitated by parent and adolescent.

Consent

Written informed consent was obtained before enrolment into the study from parents of those participants under 18 years, along with an assent form from those 17 years or younger. Consent was obtained via telephone from the parents/ guardians who were not physically present at the time of the visit . Written informed consent was obtained from adolescent participants 18 years or older.

Consent to review the patient’s medical chart was specifically requested on the consent forms. Approval to access the medical records of study participants who have consented to same was sought from the director of patient affairs in the department of medical records ( Appendix 5b)

Parents and adolescents were reassured of the anonymity and confidentiality of their responses.

# Data collection

After obtaining consent and assent (where age-appropriate), the adolescent participant was asked to complete a paper-based self-administered, interviewer-assisted questionnaire in a private space.

If multiple participants were recruited on a day, participants completed the questionnaire simultaneously in a large enough private room to facilitate sufficient distance between participants to maintain confidentiality of their individual answers. The interviewer was available and circulated the room to assist as necessary. Participants were be monitored for any signs of tiring and were offered a break if same were noted . This was done to mitigate against potential participant fatigue which may have negatively impacted their ability to answer the questions. The questionnaire was interviewer-assisted and if the patient was called to see the doctor, the researcher paused data collection until after the doctor’s visit was complete.

Tools

The questionnaire explored certain biomedical data, disordered eating behaviours and attitudes (DEBAs), depressive symptoms, symptoms of anxiety, self-perceived self-esteem, coping mechanisms, exposure to trauma, and socio-cultural attitudes towards appearance.

Biomedical data

The primary researcher performed a chart review to gather data — the adolescent’s age (date of birth), sex, anthropometry (weight in kilograms, height in metres, waist circumference in centimetres) on the date of enrolment and 1 year prior to determine change over time, blood pressure on the date of enrolment (if abnormal, the primary researcher performed a manual repeat of the blood pressure reading while at clinic), record of diagnosed comorbidities in keeping with definitions as below (hypertension, diabetes mellitus, hyperlipidemia), and date of diagnosis.

Definition of terms

For this study, the following definitions applied:

* Overweight – a body mass index (BMI) value between the 85th and 95th percentiles for age and sex (5).
* Obesity – a BMI at or greater than the 95th percentile for age and sex (5).
  + Class I – BMI ≥95th percentile for age and sex
  + Class II – BMI ≥120 percent of the 95th percentile value.
  + Class III obesity – BMI ≥140 percent of the 95th percentile value
* Hypertension was defined as systolic and/or diastolic blood pressure ≥95th percentile (based on age, sex, and height percentiles) as per the American Academy of Paediatrics (AAP) (57).
* Diabetes Mellitus was defined using one of three criteria per the International Society for Paediatric and Adolescent Diabetes (ISPAD) (58):
  + Symptoms of diabetes plus casual plasma glucose concentration ≥11.1 mmol/L (200 mg/dl), OR
  + Fasting plasma glucose ≥7.0 mmol/L (≥126 mg/dl), OR
  + 2-hour post-load glucose ≥11.1 mmol/L (≥200 mg/dl) during an OGTT (58).
* Hyperlipidemia was defined as low-density lipoprotein cholesterol (LDL-C) ≥130 mg/dL (3.4 mmol/L) per AAP (59).

Psychosocial data

Eight instruments were used to examine adolescents’ disordered eating behaviours and attitudes and associated factors:

* Disordered eating behaviours: Eating Disorder Examination Questionnaire – Youth (YEDE-Q); Three Factor Eating Questionnaire – R21 (TFEQ-R21), emotional eating domain
* Depressive symptoms: Patient Health Questionnaire - 2 (PHQ-2) and single-item for depression
* Anxious symptoms: Generalized Anxiety Disorder scale – 2 item (GAD-2) and single-item for anxiety
* Self-esteem: Rosenberg Self-Esteem Scale
* Coping mechanisms: The Coping Scale
* Trauma: The Adverse Childhood Experiences Screen (ACES )
* Sociocultural factors: Sociocultural Attitudes Towards Appearance Questionnaire - SATAQ-4R
* Sociodemographic factors: Questions previously used in Jamaican adolescents, including from the Jamaican Youth Risk and Resiliency Questionnaire (31, 60) (Appendix 14)

All instruments used were either open source or had permission for use (see Appendices). Instruments not previously used in the Jamaican adolescent population (YEDE-Q and ACES) were pre-tested for face validity and amended for cultural appropriateness as necessary. All instruments were collated into one paper-based questionnaire (Appendix 15), which was self-administered and interviewer-assisted as needed.

## **Instruments**

### **Eating Disorder Examination Questionnaire – Youth Version (YEDE-Q)**

The open-source Eating Disorder Examination Questionnaire – Youth Version (YEDE-Q) (57) is adapted from the Eating Disorder Examination Questionnaire (EDE-Q) and was designed for use with children and adolescents, with a literacy level consistent with third grade (aged 8–9 years) reading ability (58) (Appendix 6). It is a 28-item tool designed to assess the range, frequency, and severity of behaviours associated with an eating disorder.

It is separated into four different subscales (Restraint, Eating Concern, Shape Concern, and Weight Concern), as well as an overall global score, with a higher score being interpreted as more problematic eating difficulties. Items regarding frequency were rated 0 to 6, severity 0 to 6, and all other items were answered “yes” or “no.” To obtain a subscale score, the ratings for the relevant items were summed and then divided by the number of items forming the subscale. To obtain the global score, subscale scores were summed and divided by four. Scores could be compared to the community norm reference (58). The YEDE-Q had previously been used in adolescents with overweight/obesity (59) and demonstrated reliability with Cronbach’s alpha ranging from 0.63–0.93 (59).

### **Three Factor Eating Questionnaire – R21 (TFEQ-R21)**

The Three Factor Eating Questionnaire – R21 (TFEQ-R21) (60, 61) is an instrument widely used to study eating behaviours (Appendix 7) and has previously been used in the Jamaican population. It measures three domains of eating behaviours: cognitive restraint (CR), uncontrolled eating (UE), and emotional eating (EE). It consisted of 21 questions on a four-point Likert scale (scored 1 to 4) for items 1–20, and an eight-point numerical rating scale was used for item 21. Before the calculation of domain scores, items 1-16 were reverse-coded. Domain scores are calculated as the mean of all items within each domain; higher scores on each scale are indicative of greater CR, UE, and EE (60).

The TFEQ-R21 had been used in adolescents with fair internal consistency (62, 63), and among participants with overweight/obesity, and was found to be a robust, reliable tool, with a Cronbach’s alpha of 0.79 to 0.91 (64). In this study, the emotional eating subscale of the TFEQ-R21 was utilised.

### **Patient Health Questionnaire – 2 item (PHQ-2)**

The Patient Health Questionnaire – 2 item (Appendix 8) is an open-source brief screen for depression, derived from the Patient Health Questionnaire – 9 (PHQ-9). Each item is scored on a 4-point Likert scale from 0 (not at all) to 3 (nearly every day). Scores on the PHQ-2 ranged from 0 to 6, and scores above 2 or 3 represented a positive screen for clinical depression. It demonstrated good sensitivity and specificity in adolescents (65), and had good internal reliability with a Cronbach’s alpha of 0.79 (66).

### **Generalized Anxiety Disorder – 2 item (GAD-2)**

The Generalized Anxiety Disorder – 2 item (GAD-2) is a 2-item open-source instrument, derived from the GAD-7, that assesses core anxious symptoms (Appendix 9). Each item is scored on a 4-point Likert scale from 0 (not at all) to 3 (nearly every day). The total score ranged from 0–6, and a score of 3 or more was considered a positive screen for generalized anxiety disorder. It demonstrated good validity and sensitivity in adolescents (67), and had good internal reliability with a Cronbach’s alpha of 0.84 (66).

### **Single-Item Measures of Depression and Anxiety**

The single-item measure of depression and the single-item measure of anxiety are open-source instruments (Appendix 10), which assess whether patients felt depressed and anxious, respectively, by asking whether they had felt anxious and/or depressed in the past week. When compared with the Hospital Anxiety and Depression Scale (HADS), the single-item measures showed good sensitivity and specificity (68). Responses were scored with 1 for yes and 0 for no .

### **Rosenberg Self-Esteem Scale (RSES)**

The open-source Rosenberg Self-Esteem Scale (RSES) consists of 10 items using a 4-point Likert scale and is used to assess global self-esteem, with responses ranging from “strongly disagree” to “strongly agree,” scored 0-3 respectively (Appendix 11). Regarding scoring , items 3,5,8, 9 and 10 were reverse scored , and then scores were summed. The scale ranged from 0 to 30 , with higher total scores indicating higher self-esteem (69). Scores between 15 and 25 were within normal range , with scores below 15 suggesting low self-esteem. The scale demonstrated good reliability and validity among male and female adolescents (70), with Cronbach’s alpha ranging from 0.77 to 0.88 (71), and had previously been used among Jamaican adolescents (31).

### **The Coping Scale**

The Coping Scale (72) is a 13-item instrument (73) that assesses cognitive, emotional, and behavioural methods of dealing with problems (Appendix 12a). Available responses ranged from “mostly true about me” to “not true about me,” with scores assigned from 4 to 1. The total score is summative of all items, with higher scores indicating higher levels of coping (73). Previous researchers categorized coping skills into into low (<22), medium (22 – 32.99), and high (≥33). The scale had a Cronbach’s alpha of 0.88 (74). Permission for use was obtained (Appendix 12b).

### **Adverse Childhood Experiences Screen (ACES)**

The Adverse Childhood Experiences Screen (ACES) is an open-source questionnaire that enquired about childhood abuse, neglect, and household challenges (Appendix 13) (75). It consisted of 10 questions, and the score referred to the total number of ACE categories experienced (75). The total score ranged between 0 and 10. Risk for toxic stress was then categorised based on score , where participants with a score of 0 were low risk , 1-3 were intermediate risk and >3 were seen as high risk. The instrument had good internal reliability with a Cronbach’s alpha of 0.81 (76).

### **Sociocultural Attitudes Towards Appearance Questionnaire – 4 Revised (SATAQ-4R)**

The Sociocultural Attitudes Towards Appearance Questionnaire – 4 Revised (SATAQ-4R) is used to assess internalisation of appearance ideals and sociocultural pressures from peers (Appendix 14a). The female version has 31 items, and the male version had 28. Items were grouped into seven subscales: Internalisation – Thin/Low Body Fat, Internalisation – Muscular, Internalisation – General Attractiveness, Pressures – Peers, Pressures – Family, Pressures – Significant Others, and Pressures – Media.

Each item had five response options ranging from “definitely disagree” (1) to “definitely agree” (5). Scores for each subscale were obtained by summing the relevant item scores and dividing by the number of items. Higher mean scores indicated greater internalisation or pressure. The questionnaire was validated in adolescents and demonstrated satisfactory reliability (Cronbach’s alpha = 0.70–0.69) across the subscales (77). Permission for use was obtained (Appendix 14b).

Sociodemographic factors

Sociodemographic factors were enquired about using questions previously used in Jamaican adolescents, including from the Jamaican Youth Risk and Resiliency Questionnaire.

A possession score was then calculated with the score indicating the total number of working household items . A sanitation index was also calculated by summing the score assigned to toilet facilities available and source of drinking water , where flush toilet in one’s own household and bottled water for drinking were assigned the highest scores.

## **Sample Size**

Based on the literature, with an expected prevalence of 20% of adolescents (10–19 years) with overweight/obesity enrolled in the paediatric endocrine clinic at UHWI reporting disordered eating behaviours and attitudes, and assuming a power of 80% and a significance level of 5%, the study required a final sample size of 126 participants, as estimated using the ‘power’ command in STATA 17. This ensured the study had adequate power to estimate a representative prevalence of DEBAs and draw robust conclusions.

The sample size was also calculated using the Slovin Formula:  
**n = N / (1 + Ne²)**  
Where **N** represented the target population size and **e** the margin of error.

# **Data Handling**

Only researchers or research assistants directly responsible for data entry and analysis had access to the data. Data extraction sheets and questionnaires were labelled using a unique study ID with no identifying information. Hard copies were stored securely in a locked filing cabinet in the principal investigator’s office at UWI, Mona, and are scheduled for destruction five years after collection. Data were entered into SPSS Version 28.0 and stored on a password-protected computer, accessible only to the research team.

# **Data Analysis**

Data collected were entered and analysed using SPSS Version 28.0. Only researchers had access to the de-identified data. Descriptive statistics were calculated using proportions and frequencies for categorical variables, and means or medians for continuous variables. Inferential analyses (e.g., regression and correlation) were used to examine associations between factors and outcomes. Statistical significance was set at the 5% level.

# Results

**Table 1: Participant Characteristics by sex**

|  |  |  |  |
| --- | --- | --- | --- |
| **Characteristic** | **Male n, (%)** | **Female n, (%)** | **Total N (%)** |
| **Age Category**  Early adolescents: 10–15 years  Late adolescents: 16-19 years |  |  |  |
| Nutritional Status  Overweight  Class I Obesity  Class II Obesity  Class III Obesity |  |  |  |
| Clinic Attended  Endocrine  General Paediatrics  Teen |  |  |  |
| Comorbidities  Diabetes Mellitus  Hypertension  Metabolic Syndrome |  |  |  |
| Socioeconomic measures | Mean (SD) | Mean ( SD ) |  |
| Possession score  Sanitation Index |  |  |  |

**Table 2a: Prevalence of disordered eating behaviours and attitudes ( as per YEDE-Q) by sex, age, and nutritional status**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Characteristic** | **Total YEDE-Q score**  **Mean (SD)** | **Restraint subscale score**  **Mean (SD)** | **Eating concern subscale score**  **Mean ( SD)** | **Weight Concern subscale score**  **Mean ( SD)** | **Shape Concern**  **Subscale score**  **Mean (SD)** |
| **Sex**  **Male**  **Female** |  |  |  |  |  |
| **Age Category**  Early adolescents: 10–15 years  Late adolescents: 16-19 years |  |  |  |  |  |
| Nutritional Status  Overweight  Class I Obesity  Class II Obesity  Class III Obesity |  |  |  |  |  |

|  |  |
| --- | --- |
| **Characteristic** | **Emotional eating subscale**  **Mean (SD)** |
| **Sex**  **Male**  **Female** |  |
| **Age Category**  Early adolescents: 10–15 years  Late adolescents: 16-19 years |  |
| Nutritional Status  Overweight  Class I Obesity  Class II Obesity  Class III Obesity |  |

Table 2b **Prevalence of disordered eating behaviours and attitudes ( as per TEF-R21) by sex, age, and nutritional status**

**Table 3a: Prevalence of ACES among adolescents by age, sex, nutritional status**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Characteristic** | | | **Total ACE score**  **Mean (SD)** | **ACE: Low risk**  **Score 0**  **N (%)** | **ACE: Intermediate risk**  **Score 1-3**  **N (%)** | **ACE: High risk**  **Score >3**  **N (%)** |
| **Sex**  **Male**  **Female** | | |  |  |  |  |
| **Age Category**  Early adolescents: 10–15 years  Late adolescents: 16-19 years | | |  |  |  |  |
| Nutritional Status  Overweight  Class I Obesity  Class II Obesity  Class III Obesity | | |  |  |  |  |

**Table 3b: Participant Characteristics by Coping Skills**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Characteristic** | **Total coping scale score**  **Mean (SD)** | **Coping: Low**  **<22**  **N (%)** | **Coping: Medium**  **22-32**  **N (%)** | **Coping: High**  **>32**  **N (%)** |
| **Sex**  **Male**  **Female** |  |  |  |  |
| **Age Category**  Early adolescents: 10–15 years  Late adolescents: 16-19 years |  |  |  |  |
| Nutritional Status  Overweight  Class I Obesity  Class II Obesity  Class III Obesity |  |  |  |  |

**Table 3c: Participant Characteristics by Self-Esteem**

|  |  |  |  |
| --- | --- | --- | --- |
| **Characteristic** | **Self-Esteem: Low N (%)** | **Self-Esteem: Normal N (%)** | **Self-Esteem: High N (%)** |
| **Sex**  **Male**  **Female** |  |  |  |
| **Age Category**  Early adolescents: 10–15 years  Late adolescents: 16-19 years |  |  |  |
| Nutritional Status  Overweight  Class I Obesity  Class II Obesity  Class III Obesity |  |  |  |

**Table 4a: Psychological Factors by Presence and Absence of DEBAs**

|  |  |  |  |
| --- | --- | --- | --- |
| **Psychological Factor** | **No DEBAs N (%)** | **DEBAs Present N (%)** | **P value** |
| Clinically Significant Depression |  |  |  |
| Clinically Significant Anxiety |  |  |  |
| Self-Esteem: Low |  |  |  |
| Self-Esteem: Normal |  |  |  |
| Self-Esteem: High |  |  |  |
| Coping Skills: Low |  |  |  |
| Coping Skills: Medium |  |  |  |
| Coping Skills: High |  |  |  |
| **ACE Category: Low** |  |  |  |
| **ACE Category: Medium** |  |  |  |
| **ACE Category: High** |  |  |  |

**Table 5: Socioeconomic Indicators by Presence or Absence of DEBAs**

|  |  |  |  |
| --- | --- | --- | --- |
| **SES Indicator** | **No DEBAs (Mean ± SD)** | **DEBAs Present (Mean ± SD)** | **p-value** |
| **Possession Score** |  |  |  |
| **Sanitation Index** |  |  |  |

**Table 6a: BMI Outcomes by Presence or Absence of DEBAs**

|  |  |  |  |
| --- | --- | --- | --- |
| **Health Outcome** | **Presence of DEBAs (Mean SD)** | **Absence of DEBAs (Mean SD)** | **p-value** |
| Mean BMI Change (kg/m²) in preceding year |  |  |  |
| Percentage with BMI Increase |  |  |  |
| Percentage with BMI Decrease |  |  |  |

**Table 6b : Comparison of Exercise Score and BMI Outcome**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Exercise Score Category** | **BMI Decrease N (%)** | **No Change in BMI N (%)** | **BMI Increase N (%)** | **Total N (%)** | **p-value** |
| Low (<2 ) |  |  |  |  |  |
| Moderate (2) |  |  |  |  |  |
| High(>2) |  |  |  |  |  |

**Table 7: Medical Complications by Presence or Absence of DEBAs**

|  |  |  |  |
| --- | --- | --- | --- |
| **Medical Complication** | **Presence of DEBAs (N/%)** | **Absence of DEBAs (N/%)** | **p-value** |
| Diabetes Mellitus |  |  |  |
| Hypertension |  |  |  |
| Hyperlipidemia |  |  |  |

# **Ethical Considerations**

Parents or guardians of all participants were asked to provide written voluntary consent after the study’s purpose and procedures were explained. Adolescents under 18 were asked to provide written assent. Participants were selected based on eligibility and not due to ease of availability, diminished autonomy, or bias. They were informed that participation was voluntary and that they could withdraw at any time. Confidentiality was maintained throughout.

Ethical approval was sought from the UWI Mona Campus Research Ethics Committee. The study was considered medium-risk, as it involved exploring emotions and past trauma. Measures were implemented to avoid coercion, and participants were reminded they could stop at any time.

The study was not promoted via flyers to avoid distress related to the stigma of overweight and obesity. If participants became distressed during questioning, researchers discreetly assessed the need for support. Referrals were made to the public child guidance clinic (for participants ≤18 years) or to the UHWI Adolescent Clinic (for older participants). For the latter, fees for the first two visits were waived.

# **Limitations**

The study population was limited to adolescents referred to and attending the paediatric endocrine clinic at UHWI, and findings were not nationally representative. Participants may have had additional comorbidities, which could have affected generalisability.

Retrospective anthropometric data collected by different staff on varied instruments over time may have introduced measurement bias in assessing BMI change over the year prior.

# **Dissemination of Findings**

Results were shared with stakeholders including the Department of Child and Adolescent Health, the Paediatric Association of Jamaica, and the Ministry of Health and Wellness, through presentations and policy-relevant summaries. The findings were also prepared for publication in a peer-reviewed journal.

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# Appendix 1



# Appendix 2



# Appendix 3



# Appendix 4



# Appendix 5a

UNIVERSITY HOSPITAL OF THE WEST INDIES

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Date:

Dr. Carl Bruce

Senior Director of Clinical Services

University Hospital of the West Indies

Kingston, Jamaica

Dear Dr. Bruce,

Investigators at the University of the West Indies (UWI)/ University Hospital of the West Indies (UHWI) wish to conduct a study entitled: ‘Disordered eating behaviours and attitudes among adolescents with overweight/obesity in the Paediatric endocrine clinic at the UHWI’.

We are seeking your institutional approval to administer questionnaires once appropriate consent/assent is obtained from guardians and participants, as well as to have access to the medical records for adolescents attending the paediatric endocrine clinic at the UHWI. A copy of the research proposal is enclosed, along with the ethical approval received from the Mona Campus Research Ethics Committee.

The study will form the basis of the clinical research project for Dr. Antoinette Sealy, a 3rd year resident, in partial fulfilment of the Doctor of Medicine in Paediatrics.

We look forward to your usual support.

Regards,

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Principal Investigator

Dr. Abigail Harrison

“Preserving our Past, Managing the Present to Create our Future”

# Appendix 5a1

A letter of a medical research

AI-generated content may be incorrect.

# Appendix 5b

UNIVERSITY HOSPITAL OF THE WEST INDIES

A logo of a university

Description automatically generatedMona, St. Andrew, Jamaica W.I. [www.uhwi.gov.jm](http://www.uhwi.gov.jm/)

Tel: 927-1620-9 Fax: 927-2101 [info@uhwi.gov.jm](mailto:info@uhwi.gov.jm)

Date

Mrs. Janet Powell

Director- Patient Affairs

Medical Records

University Hospital of the West Indies Mona, Kingston 7

Dear Mrs. Powell,

We kindly request your approval and department’s assistance in medical chart retrievals to facilitate Dr Antoinette Sealy in the conduct of her research project at the University Hospital of the West Indies (UHWI). Her study is entitled ‘Disordered eating behaviours and attitudes among adolescents with overweight/obesity in the Paediatric endocrine clinic at the UHWI’.

The study will form the basis of the clinical research project for Dr. Antoinette Sealy, a 3rd year resident, in partial fulfilment of the Doctor of Medicine in Paediatrics.

Best regards,

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Dr. Abigail Harrison

Principal Investigator

“Preserving our Past, Managing the Present to Create our Future”

# Appendix 5b1

A letter of a medical research

AI-generated content may be incorrect.

# Appendix 6

EATING QUESTIONNAIRE—YOUTH VERSION\*

PART I\*: PLEASE READ THIS BEFORE ANSWERING THE QUESTIONS

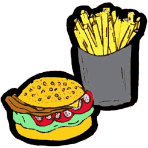
Some of these questions will ask about any binges that you might have had during the past four weeks (28 days). A binge has two parts: 1) eating a really big amount of food given the situation and

2) feeling out of control.

What is a “really big amount of food?”

A really big amount of food is much more than most people would eat in the same situation. Some examples might be: 1) eating two full meals (such as two plates of salad/first course, two main dishes, two desserts, etc.); 2) eating three main courses (such as 3 plates of pasta); or 3) eating a really big amount of one food (such as 4 brownies) or a few different kinds of foods (such as a big bowl of ice cream, 8 cookies, a donut, and a handful of candy). Below are some pictures of a really big amount of food to help you.

[](http://www.clipsahoy.com/webgraphics2/as3261.htm) 



# Really big Not really big

1.What is “feeling out of control?”

Feeling out of control while eating might mean different things for different people. It may mean

that you’re: 1) feeling DRIVEN to eat; 2) feeling like you JUST cannot stop eating; 3) feeling like you’re not able to stop yourself from starting to eat in the first place; or 4) feeling like you shouldn’t even try to control your eating because you know that, no matter what, you’re going to eat too much. Some kids describe feeling out of control like a ball rolling down a hill, that it just keeps going and going.

Examples of a binge:

1. REALLY BIG AND OUT OF CONTROL. After school one evening, Jenny ate 2 pieces of chicken, a large package of frozen vegetables, 3 cups of rice, 1/2 of a coffee cake and a piece of fruit. This is a really big amount of food. While she ate, Jenny felt like she JUST could not stop eating, ate more quickly than usual, and ate until she felt really, really full. Afterwards Jenny was very upset about how much she’d eaten, and said she felt sad, guilty, and mad at herself.

Examples that are not binges either because they are too small, or the person does not feel out of control while eating:

1. REALLY BIG BUT NOT OUT OF CONTROL. A few times a week, Katie ate lunch at

McDonald’s with 2 friends. Her usual order was a Big Mac, a fish fillet sandwich, 2 large orders of fries, and a large chocolate shake. This is a really big amount of food. Although she ate more than her friends did and knew she was eating a lot of high-fat food, she didn’t feel like she JUST could not stop eating, and she did not feel upset afterwards about how much she’d eaten.

OUT OF CONTROL BUT NOT REALLY BIG. For lunch one day, Joey had a ham and cheese sandwich with mayonnaise on a roll, a small bag of potato chips, a candy bar, and a Diet Coke. Joey felt out of control because he’d planned to have turkey on whole wheat with lettuce and tomato plus a piece of fruit for dessert, but couldn’t stop himself from changing his order. Although this was a big meal, it was not really big, so we wouldn’t consider it a binge.

1. OUT OF CONTROL BUT NOT REALLY BIG. Lizzie ate 2 donuts someone brought to homeroom one morning. She had started a diet that day and planned to skip breakfast. At first, Lizzie said no to the donuts, but after everyone else had gone to their other classes she snuck back into homeroom and very quickly ate the donuts so no one would see her eating. She felt very guilty and embarrassed after and hated feeling so out of control of her eating, promising to start dieting again the next day. Although Lizzie felt bad about eating the donuts, this was not a really big amount of food, so it would not be considered a binge.

Part II\*\* Instructions: These questions are about the PAST FOUR WEEKS ONLY (28 days). In order to help you remember your eating patterns over the past 28 days, try to think of any events that might have changed the way you normally eat, such as holidays, parties, vacations, or stressful events (such as a school project being due, or getting in a fight with your parents). Please read each question carefully. Please answer all of the questions. Thank you very much!

Questions 1 to 16: Please circle the number that is most like your behavior. Remember that the questions are only about the past four weeks (28 days).

ON HOW MANY OF THE PAST 28 DAYS. . .:

1. On how many of the past 28 days have you on purpose been trying to cut down on what you eat to change your shape or weight? (circle one)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| None of  the days | A few of  the days | Less than  half the days | Half the  days | More than  half the days | Most of  the days | Every  day |
| (1-5 days) | | (6-12 days) | (13-15 days) (16-22 days) | | (23-27 days) | |

1. On how many of the past 28 days have you gone for most of the day (8 hours or more) without eating anything in order to change your shape or weight? (circle one)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| None of  the days | A few of  the days | Less than  half the days | Half the  days | More than  half the days | Most of  the days | Every  day |
| (1-5 days) | | (6-12 days) | (13-15 days) (16-22 days) | | (23-27 days) | |

1. On how many of the past 28 days have you tried not to eat any foods that you like in order to change your shape or weight? (circle one)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| None of  the days | A few of  the days | Less than  half the days | Half the  days | More than  half the days | Most of  the days | Every  day |
|  | (1-5 days) | (6-12 days) | (13-15 days) | (16-22 days) | (23-27 days) |  |

1. On how many of the past 28 days have you tried to stick to strict rules about your eating in order to change your shape or weight; for example, only letting yourself eat a certain type or amount of food, or certain number of calories? (circle one)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| None of  the days | A few of  the days | Less than  half the days | Half the  days | More than  half the days | Most of  the days | Every  day |
| (1-5 days) | | (6-12 days) | (13-15 days) (16-22 days) | | (23-27 days) | |

1. On how many of the past 28 days has thinking about food or calories made it hard for you to pay attention to things you are interested in (for example, watching TV, reading, or playing on the computer)? (circle one)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| None of  the days | A few of  the days | Less than  half the days | Half the  days | More than  half the days | Most of  the days | Every  day |
|  | (1-5 days) | (6-12 days) | (13-15 days) | (16-22 days) | (23-27 days) |  |

1. On how many of the past 28 days have you been afraid of losing control over eating (afraid that you won’t be able to stop eating)? (circle one)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| None of  the days | A few of  the days | Less than  half the days | Half the  days | More than  half the days | Most of  the days | Every  day |
| (1-5 days) | | (6-12 days) | (13-15 days) (16-22 days) | | (23-27 days) | |

1. On how many of the past 28 days have you felt like you did lose control over your eating? (circle one)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| None of  the days | A few of  the days | Less than  half the days | Half the  days | More than  half the days | Most of  the days | Every  day |
|  | (1-5 days) | (6-12 days) | (13-15 days) | (16-22 days) | (23-27 days) |  |

1. On how many of the past 28 days have you binged (eaten a really big amount of food and felt that you had lost control over your eating)? (circle one)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| None of  the days | A few of  the days | Less than  half the days | Half the  days | More than  half the days | Most of  the days | Every  day |
| (1-5 days) | | (6-12 days) | (13-15 days) (16-22 days) | | (23-27 days) | |

1. Over the past 28 days, how many days have you eaten in secret? Do not count binges. (circle one)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| None of  the days | A few of  the days | Less than  half the days | Half the  days | More than  half the days | Most of  the days | Every  day |
|  | (1-5 days) | (6-12 days) | (13-15 days) | (16-22 days) | (23-27 days) |  |

1. On how many of the past 28 days have you wanted a completely flat stomach (as flat as a board)? (circle one)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| None of  the days | A few of  the days | Less than  half the days | Half the  days | More than  half the days | Most of  the days | Every  day |
|  | (1-5 days) | (6-12 days) | (13-15 days) | (16-22 days) | (23-27 days) |  |

1. On how many of the past 28 days have you had a very strong wish to lose weight? (circle one)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| None of  the days | A few of  the days | Less than  half the days | Half the  days | More than  half the days | Most of  the days | Every  day |
| (1-5 days) | | (6-12 days) | (13-15 days) (16-22 days) | | (23-27 days) | |

1. Over the past 28 days, on how many of the times that you have eaten have you felt guilty (that you've done something wrong) because of how it might change your shape or weight? Do not count binges (circle one)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| None of | A few of | Less than | Half the | More than | Most of | Every |
| the times | the times | half the times | times | half the times | the time | time |

1. Over the past 28 days have there been times when you have eaten a really big amount of food, compared to what other kids your age would eat in the same situation? (Please circle)

No Yes

1. How many times has this happened over the past 28 days?
2. On how many of these times did feel like you had lost control while eating?
3. Over the past 28 days have you had times where you felt that you had lost control over your eating, but have not eaten a really big amount of food? (Please circle)

No Yes

Questions 17-29: Please look at the first two pages for help answering these questions. Please circle the number that is most like your behavior. Remember that the questions only refer to the past four weeks (28 days

1. How many times has this happened over the past 28 days?
2. Over the past 28 days have you made yourself throw up? (Please circle)

No Yes

1. How many times has this happened over the past 28 days?
2. Over the past 28 days have you taken any medicines that make you go to the bathroom (have a bowel movement)? (Please circle)

No Yes

1. How many times has this happened over the past 28 days?
2. Over the past 28 days have you taken water pills (pills that make you urinate or pee)? (Please circle)

No Yes

1. How many times has this happened over the past 28 days?
2. Over the past 28 days have you exercised very hard in order to change your shape or weight (and not just for fun)? (Please circle)

No Yes

How many times has this happened over the past 28 days?

Questions 30 to 38: Please mark the spot on the line that best describes how you feel. Remember that the questions only refer to the past four weeks (28 days). For these questions, when we say

“weight,” we mean the number on the scale, and when we say “shape,” we mean what you see in the mirror.

OVER THE PAST 28 DAYS. . .:

1. Over the past 28 days, has your weight (the number on the scale) made a difference in how you think about (judge) yourself as a person? (mark off on the line)

Not at all A little bit A lot Very, very much

1. Over the past 28 days, has your shape (what you see in the mirror) made a difference in how you think about (judge) yourself as a person? (mark off on the line)

Not at all A little bit A lot Very, very much

1. Over the past 28 days, how much would it upset you if you had been asked to weigh yourself once a week (no more and no less) for the next four weeks? (mark off on the line)

Not at all A little bit A lot Very, very much

1. Over the past 28 days, how unhappy have you been with your weight (the number on the scale)? (mark off on the line)

Not at all A little bit A lot Very, very much

Questions 30 to 38: Please mark the spot on the line that best describes how you feel. Remember that the questions only refer to the past four weeks (28 days). For these questions, when we say

“weight,” we mean the number on the scale, and when we say “shape,” we mean what you see in the mirror.

OVER THE PAST 28 DAYS. . .:

1. Over the past 28 days, has your weight (the number on the scale) made a difference in how you think about (judge) yourself as a person? (mark off on the line)

Not at all A little bit A lot Very, very much

1. Over the past 28 days, has your shape (what you see in the mirror) made a difference in how you think about (judge) yourself as a person? (mark off on the line)

Not at all A little bit A lot Very, very much

1. Over the past 28 days, how much would it upset you if you had been asked to weigh yourself once a week (no more and no less) for the next four weeks? (mark off on the line)

Not at all A little bit A lot Very, very much

1. Over the past 28 days, how unhappy have you been with your weight (the number on the scale)? (mark off on the line)

Not at all A little bit A lot Very, very much

1. Over the past 28 days, how unhappy have you been with your shape (what you see in the mirror)? (mark off on the line)

Not at all A little bit A lot Very, very much

1. Over the past 28 days, how thin have you wanted to be? (mark off on the line)

Not at all A little bit A lot Very, very thin

1. Over the past 28 days, how worried have you been about other people seeing you eat? Do not count binge eating. (mark off on the line)

Not at all A little bit A lot Very, very much

1. Over the past 28 days, how uncomfortable or embarrassed have you felt seeing your own body (for example, in the mirror, reflected in a store window, getting undressed, having a bath or shower)? (mark off on the line)

Not at all A little bit A lot Very, very much

1. Over the past 28 days, how uncomfortable or embarrassed have you felt about other people seeing your shape or figure (for example, getting changed for swimming, in the swimming pool, wearing clothes that show your shape)? (mark off on the line)

Not at all A little bit A lot Very, very much

1. Have your eating and your feelings about your shape and weight over the past four weeks been about the same as the past year? (Please circle)

No Yes

If no, how has the past year been different from the past four weeks?

1. Over the past 28 days, how uncomfortable or embarrassed have you felt seeing your own body (for example, in the mirror, reflected in a store window, getting undressed, having a bath or shower)? (mark off on the line)

Not at all A little bit A lot Very, very much

1. Over the past 28 days, how uncomfortable or embarrassed have you felt about other people seeing your shape or figure (for example, getting changed for swimming, in the swimming pool, wearing clothes that show your shape)? (mark off on the line)

Not at all A little bit A lot Very, very much

1. Have your eating and your feelings about your shape and weight over the past four weeks been about the same as the past year? (Please circle)

No Yes

If no, how has the past year been different from the past four weeks?

\*Part I adapted with permission from Goldfein JA, Devlin MJ, and Kamenetz C. Eating Disorder Examination Questionnaire With and Without Instruction to Assess Binge Eating in Patients with Binge Eating Disorder. Int J Eat Disord 2005;37:107.

\*\*Part II adapted with permission from Fairburn C & Beglin S. Assessment of Eating Disorders: Interview or Self-Report Questionnaire? Int J Eat Disord 1994;16:363.

# Appendix 7a

The Three-Factor Eating Questionnaire Revised 21-Item (TFEQ-R21)

1. I deliberately take small helpings to control my weight.

(1) Definitely true, (2) Mostly true, (3) Mostly false, (4) Definitely false

2. I start to eat when I feel anxious.

(1) Definitely true, (2) Mostly true, (3) Mostly false, (4) Definitely false

3. Sometimes when I start eating, I just can’t seem to stop.

(1) Definitely true, (2) Mostly true, (3) Mostly false, (4) Definitely false

4. When I feel sad, I often eat too much.

(1) Definitely true, (2) Mostly true, (3) Mostly false, (4) Definitely false

5. I don’t eat some foods because they make me fat.

(1) Definitely true, (2) Mostly true, (3) Mostly false, (4) Definitely false

6. Being with someone who is eating, often makes me want to also eat.

(1) Definitely true, (2) Mostly true, (3) Mostly false, (4) Definitely false

7. When I feel tense or ‘‘wound up’’, I often feel I need to eat.

(1) Definitely true, (2) Mostly true, (3) Mostly false, (4) Definitely false

8. I often get so hungry that my stomach feels like a bottomless pit.

(1) Definitely true, (2) Mostly true, (3) Mostly false, (4) Definitely false

9. I’m always so hungry that it’s hard for me to stop eating before finishing all of the food on my plate.

(1) Definitely true, (2) Mostly true, (3) Mostly false, (4) Definitely false

10. When I feel lonely, I console myself by eating.

(1) Definitely true, (2) Mostly true, (3) Mostly false, (4) Definitely false

11. I consciously hold back on how much I eat at meals to keep from gaining weight.

(1) Definitely true, (2) Mostly true, (3) Mostly false, (4) Definitely false

12. When I smell a sizzling steak or see a juicy piece of meat, I find it very difficult to keep from eating even if I’ve just finished a meal.

(1) Definitely true, (2) Mostly true, (3) Mostly false, (4) Definitely false

13. I’m always hungry enough to eat at any time.

(1) Definitely true, (2) Mostly true, (3) Mostly false, (4) Definitely false

14. If I feel nervous, I try to calm down by eating.

(1) Definitely true, (2) Mostly true, (3) Mostly false, (4) Definitely false

15. When I see something that looks very delicious, I often get so hungry that I have to eat right away.

(1) Definitely true, (2) Mostly true, (3) Mostly false, (4) Definitely false

16. When I feel depressed, I want to eat.

(1) Definitely true, (2) Mostly true, (3) Mostly false, (4) Definitely false

17. How often do you avoid ‘‘stocking up’’ on tempting foods?

(1) Almost never, (2) Seldom, (3) Usually, (4) Almost always

18. How likely are you to make an effort to eat less than you want?

(1) Unlikely, (2) A little likely, (3) Somewhat likely, (4) Very likely.

19. Do you go on eating binges even though you’re not hungry?

(1) Never, (2) Rarely, (3) Sometimes, (4) At least once a week

20. How often do you feel hungry?

(1) Only at mealtimes, (2) Sometimes between meals (3) Often between meals (4) Almost always

21. On a scale from 1 to 8, where 1 means no restraint in eating and 8 means total restraint, what number would you give yourself?

Mark the number that best applies to you: 1 2 3 4 5 6 7 8.

The uncontrolled eating domain was composed of items 3, 6, 8, 9, 12, 13, 15, 19, 20. The cognitive restraint domain was composed of items 1, 5, 11, 17, 18, 21. The emotional eating domain was composed of items 2, 4, 7, 10, 14, 16.

Before calculating the domain scores, items 1–16 should be reverse coded, and item 21 should be recoded as follows: 1–2 scoresas1;3–4 as 2; 5–6 as 3;7–8 as 4.

# Appendix 8

PHQ-2

How often have you been bothered by each of the following symptoms during the past two weeks? For each symptom tick in the box beside the answer that best describes how you have been feeling.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Not at all | Several days | More than half the days | Nearly every day | |
| 1. Feeling down, depressed, irritable, or hopeless? |  |  |  |  |
| 1. Little interest or pleasure in doing things |  |  |  |  |

# Appendix 9

GAD-2

. Over the last 2 weeks, how often have you been bothered by any of the following problems?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Not at all | Several days | More than half the days | Nearly every day | |
| 1. Feeling nervous, anxious or on edge? |  |  |  |  |
| 2. Not being able to stop or control worrying? |  |  |  |  |

# Appendix 10

Single item screen

Over the past week have you felt anxious? Yes No

Over the past week have you felt depressed? Yes No

# Appendix 11

Rosenberg self-esteem scale

Please tick the box that shows how much you agree with each statement.

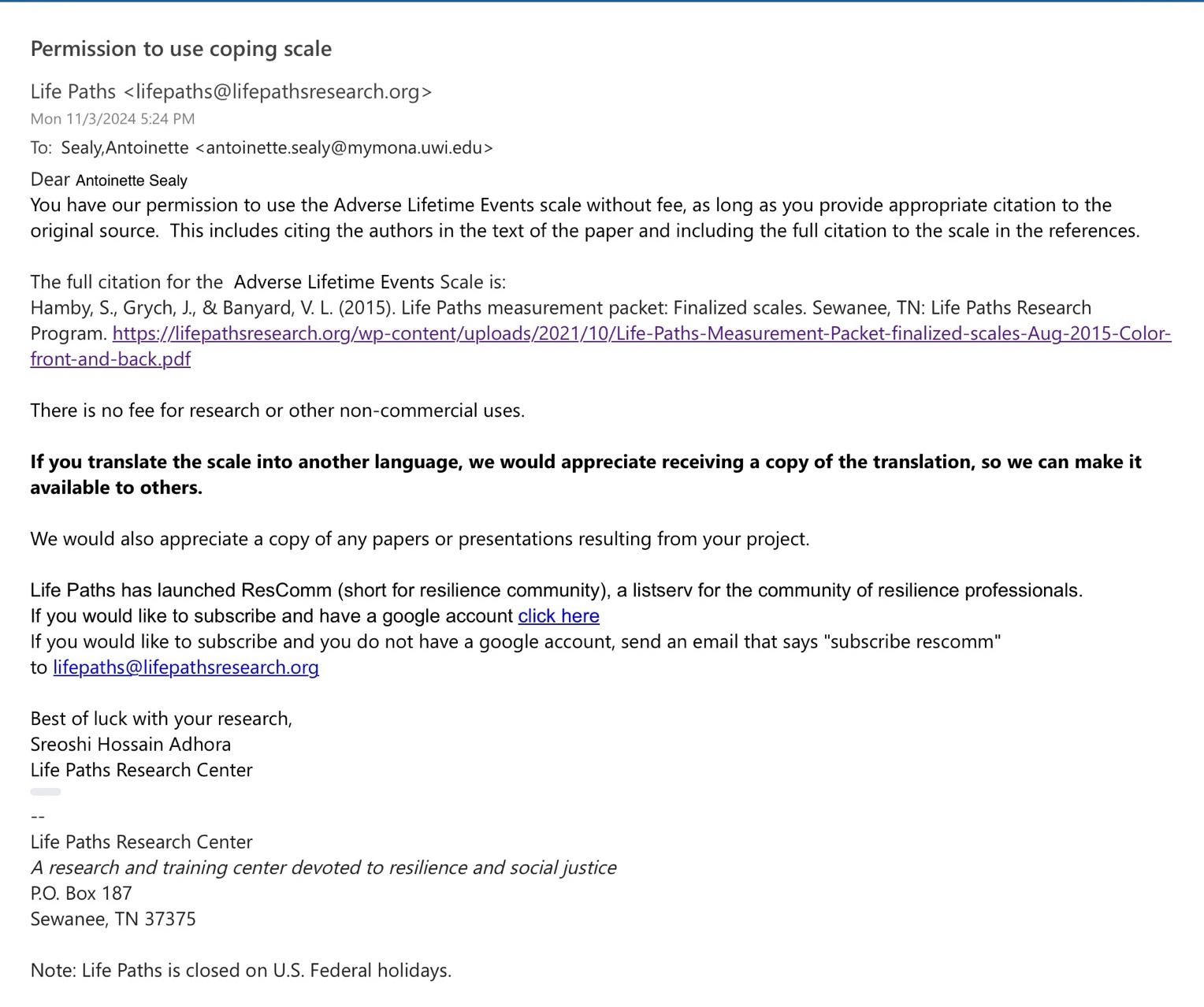
|  | Agree  A lot | Agree | Disagree | Disagree A lot |
| --- | --- | --- | --- | --- |
| 1. On a whole I am satisfied with myself. |  |  |  |  |
| 1. At times I think I am no good at all. |  |  |  |  |
| 1. I feel that I have many good qualities. |  |  |  |  |
| 1. I can do things as well as most other people. |  |  |  |  |
| 1. I feel I do not have much to be proud of in my life. |  |  |  |  |
| 1. I certainly feel useless at times. |  |  |  |  |
| 1. I feel that I am a person of worth, at least equal to other people. |  |  |  |  |
| 1. I wish I could have more respect for myself. |  |  |  |  |
| 1. All in all I tend to feel like a failure. |  |  |  |  |
| 1. I think positively about myself. |  |  |  |  |

# Appendix 12a

Coping Scale

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Mostly true about me | Somewhat true about me | A little true about me | Not true about me | |
| 1. When dealing with a problem, I spend time trying to understand what happened. |  |  |  |  |
| 1. When dealing with a problem, I try to see the positive side of the situation. |  |  |  |  |
| 1. When dealing with a problem, I try to step back from the problem and think about it from a different point of view. |  |  |  |  |
| 1. When dealing with a problem, I consider several alternatives for handling the problem. |  |  |  |  |
| 1. When dealing with a problem, I try to see the humour in it. |  |  |  |  |
| 1. When dealing with a problem, I think about what it might say about bigger lifestyle changes I need to make. |  |  |  |  |
| 1. When dealing with a problem, I often wait it out and see if it doesn’t take care of itself. |  |  |  |  |
| 1. When dealing with a problem, I often try to remember that the problem is not as serious as it seems. |  |  |  |  |
| 1. When dealing with a problem, I often use exercise, hobbies, or meditation to help me get through a tough time. |  |  |  |  |
| 1. When dealing with a problem, I make jokes about it or try to make light of it. |  |  |  |  |
| 1. When dealing with a problem, I take steps to take better care of myself and my family for the future. |  |  |  |  |
| 1. When dealing with a problem, I make compromises. |  |  |  |  |
| 1. When dealing with a problem, I work on making things better for the future by changing my habits, such as diet, exercise, budgeting, or staying in closer touch with people I care about. |  |  |  |  |

# Appendix 12b



# Appendix 13

Paediatric ACEs

|  |  |  |
| --- | --- | --- |
| Did this ever happen to you as a child before you were 10 years old? | Yes | No |
| 1. Did a parent or other adult in the household often or very often, swear at you, insult you, put you down and/or threaten you in any way that made you think that you might be physically hurt? |  |  |
| 1. Did a parent or other adult in the household often or very often …. push, grab. slap or throw something at you? Or ever hit you so hard that you had marks or were injured? |  |  |
| 1. Did an adult or person at least 5 years older ever touch or fondle or have you touch their body in a sexual way? 2. Did anyone attempt or actually have oral, anal, or vaginal intercourse with you? |  |  |
| 1. Did you often or very often feel that no one in your family loved you or thought you were important or special? Or your family didn't look out for each other, feel close to each other, or support each other ? |  |  |
| 1. Did you often or very often feel that you didn't have enough to eat, had to wear dirty clothes, and had no one to protect you? Or your parents were too drunk or high to take care of you or take you to the doctor if you needed it ? |  |  |
| 1. Was your mother or stepmother often, or very often pushed, grabbed, slapped; or had something thrown at her? Sometimes, often, or very often kicked, bitten, hit with a fist or something hard? Ever threatened or hurt by a knife or gun or another weapon? |  |  |
| 1. As a child, did you ever live with anyone who was a problem drinker or alcoholic or lived with anyone who used street drugs ? |  |  |
| 1. Was a household member ever depressed; mentally ill or sent to a mental hospital? 2. Has a family member ever attempted suicide ? |  |  |
| 1. As a child were your parents ever separated (didn’t live together) or divorced? |  |  |
| 1. Did a household member ever go to prison, or was constantly in and out of jail? |  |  |

# Appendix 14a

Sociocultural Attitudes Towards Appearance Questionnaire – 4R – female

Directions: Please read each of the following items carefully and indicate the number that

best reflects your agreement with the statement.

|  | Definitely Disagree | Mostly  Disagree | Neither Agree Nor  Disagree | Mostly Agree | Definitely Agree |
| --- | --- | --- | --- | --- | --- |
| 1. It is important for me to look   muscular. |  |  |  |  |  |
| 1. It is important for me to look good in the clothes I wear |  |  |  |  |  |
| 1. I want my body to look very thin. |  |  |  |  |  |
| 1. I think a lot about looking muscular |  |  |  |  |  |
| 1. I think a lot about my appearance. |  |  |  |  |  |
| 1. I think a lot about looking thin. |  |  |  |  |  |
| 1. I want to be good looking. |  |  |  |  |  |
| 1. I want my body to look muscular. |  |  |  |  |  |
| 1. . I don't really think much about my appearance. |  |  |  |  |  |
| 1. I don't want my body to look   muscular |  |  |  |  |  |
| 1. I want my body to look very lean. |  |  |  |  |  |
| 1. It is important to me to be attractive |  |  |  |  |  |
| 1. I think a lot about having very little body fat |  |  |  |  |  |

|  | Definitely Disagree | Mostly  Disagree | Neither Agree Nor  Disagree | Mostly Agree | Definitely Agree |
| --- | --- | --- | --- | --- | --- |
| 1. It is important for me to look   muscular. |  |  |  |  |  |
| 1. It is important for me to look good in the clothes I wear |  |  |  |  |  |
| 1. I want my body to look very thin. |  |  |  |  |  |
| 1. I think a lot about looking muscular |  |  |  |  |  |
| 1. I think a lot about my appearance. |  |  |  |  |  |
| 1. I think a lot about looking thin. |  |  |  |  |  |
| 1. I want to be good looking. |  |  |  |  |  |
| 1. I want my body to look muscular. |  |  |  |  |  |
| 1. . I don't really think much about my appearance. |  |  |  |  |  |
| 1. I don't want my body to look   muscular |  |  |  |  |  |
| 1. I want my body to look very lean. |  |  |  |  |  |
| 1. It is important to me to be attractive |  |  |  |  |  |
| 1. I think a lot about having very little body fat |  |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1. I don't think much about how I look. |  |  |  |  |  |
| 1. I would like to have a body that looks very muscular |  |  |  |  |  |
| 1. . I feel pressure from family members to look thinner |  |  |  |  |  |
| 1. . I feel pressure from family members to improve my appearance. |  |  |  |  |  |
| 1. Family members encouraged me to decrease my level of body fat. |  |  |  |  |  |
| 1. . Family members encourage me to get in better shape. |  |  |  |  |  |
| 1. My peers encourage me to get thinner. |  |  |  |  |  |
| 1. . I feel pressure from my peers to improve my appearance. |  |  |  |  |  |
| 1. . I feel pressure from my peers to look in better shape. |  |  |  |  |  |
| 1. I get pressure from my peers to decrease my level of body fat. |  |  |  |  |  |
| 1. Significant others encourage me to get thinner. |  |  |  |  |  |
| 1. I feel pressure from significant others to improve my appearance. |  |  |  |  |  |
| 1. I feel pressure from significant others   to look in better shape. |  |  |  |  |  |
| 1. I get pressure from significant others to decrease my level of body fat |  |  |  |  |  |
| 1. I feel pressure from the media to look   in better shape. |  |  |  |  |  |
| 1. I feel pressure from the media to look   thinner. |  |  |  |  |  |
| 1. I feel pressure from the media to   improve my appearance. |  |  |  |  |  |
| 1. I feel pressure from the media to   decrease my level of body fat. |  |  |  |  |  |

Sociocultural Attitudes Towards Appearance Questionnaire – 4R – Male

|  | Definitely Disagree | Mostly  Disagree | Neither Agree Nor  Disagree | Mostly Agree | Definitely Agree |
| --- | --- | --- | --- | --- | --- |
| 1. It is important for me to look   muscular. |  |  |  |  |  |
| 1. I want my body to look very thin |  |  |  |  |  |
| 1. I think a lot about looking muscular |  |  |  |  |  |
| 1. I think a lot about looking thin |  |  |  |  |  |
| 1. I want my body to look muscular. |  |  |  |  |  |
| 1. . I don't really think much about my appearance. |  |  |  |  |  |
| 1. I don't think much about how I look. |  |  |  |  |  |
| 1. I would like to have a body that looks very muscular |  |  |  |  |  |
| 1. . I feel pressure from family members to look thinner |  |  |  |  |  |
| 1. . I feel pressure from family members to improve my appearance. |  |  |  |  |  |
| 1. Family members encourage me to get in better shape. |  |  |  |  |  |
| 1. . I feel pressure from family members to be more muscular |  |  |  |  |  |

For Males ( Females please complete the previous section )

We will now ask you questions about the way you think about your body

Directions: Please read each of the following items carefully and tick the box beside the number that best reflects your agreement with the statement.

|  | Definitely Disagree | Mostly  Disagree | Neither Agree Nor  Disagree | Mostly Agree | Definitely Agree |
| --- | --- | --- | --- | --- | --- |
| 1. It is important for me to look   muscular. |  |  |  |  |  |
| 1. I want my body to look very thin |  |  |  |  |  |
| 1. I think a lot about looking muscular |  |  |  |  |  |
| 1. I think a lot about looking thin |  |  |  |  |  |
| 1. I want my body to look muscular. |  |  |  |  |  |
| 1. . I don't really think much about my appearance. |  |  |  |  |  |
| 1. I don't think much about how I look. |  |  |  |  |  |
| 1. I would like to have a body that looks very muscular |  |  |  |  |  |
| 1. . I feel pressure from family members to look thinner |  |  |  |  |  |
| 1. . I feel pressure from family members to improve my appearance. |  |  |  |  |  |
| 1. Family members encourage me to get in better shape. |  |  |  |  |  |
| 1. . I feel pressure from family members to be more muscular |  |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1. Family members encourage me to increase the size or definition of my muscles |  |  |  |  |  |
| 1. . I feel pressure from my peers to improve my appearance. |  |  |  |  |  |
| 1. . I feel pressure from my peers to look in better shape. |  |  |  |  |  |
| 1. I get pressure from my peers to be more muscular |  |  |  |  |  |
| 1. My peers encourage me to increase the size or definition my muscles |  |  |  |  |  |
| 1. I feel pressure from significant others to improve my appearance. |  |  |  |  |  |
| 1. I feel pressure from significant others   to look in better shape. |  |  |  |  |  |
| 1. I get pressure from significant others to decrease my level of body fat |  |  |  |  |  |
| 1. I feel pressure from significant others to be more muscular. |  |  |  |  |  |
| 1. I feel pressure from significant others to increase the size or definition of me   muscles. |  |  |  |  |  |
| 1. I feel pressure from the media to look in better shape. |  |  |  |  |  |
| 1. I feel pressure from the media to look   thinner. |  |  |  |  |  |
| 1. I feel pressure from the media to   improve my appearance. |  |  |  |  |  |
| 1. I feel pressure from the media to   decrease my level of body fat. |  |  |  |  |  |
| 1. I feel pressure from the media to be   more muscular. |  |  |  |  |  |
| 1. I feel pressure from the media to   increase the size or definition of me  muscles. |  |  |  |  |  |

# Appendix 14b

A screenshot of a email

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# Appendix 15

Sociodemographic characteristics

1. What is your date of birth
2. Are you male or female ? Female [\_] Male [\_\_]
3. Where do you live? Urban area [\_] Rural area [\_\_]
4. Are your parents? (Tick the relevant option)
5. Living together most of the time (at least 3 days out of the week for most weeks) [\_\_\_]
6. Living separately [\_\_\_]
7. One of my parents is dead [\_\_\_]
8. Both of my parents are dead [\_\_\_]
9. Don’t know where my parents are [\_\_\_\_]
10. If living together are your parents? Married [\_\_\_] Common-Law [\_\_\_]
11. If living separately are your parents?

Married [\_\_\_] Visiting [\_\_\_] No relationship [\_\_\_]

1. Which of the following items do you have in your house that are working? (tick all that apply)
2. Living room set [\_\_\_\_] yes [\_\_\_\_] no
3. Stove (gas/ electric) [\_\_\_\_] yes [\_\_\_\_] no
4. Refrigerator or freezer [\_\_\_\_] yes [\_\_\_\_] no
5. Microwave oven [\_\_\_\_] yes [\_\_\_\_] no
6. Air conditioner [\_\_\_\_] yes [\_\_\_\_] no
7. Land line telephone [\_\_\_\_] yes [\_\_\_\_] no
8. Radio [\_\_\_\_] yes [\_\_\_\_] no
9. Stereo equipment/component set [\_\_\_\_] yes [\_\_\_\_] no
10. TV [\_\_\_\_] yes [\_\_\_\_] no
11. Cable [\_\_\_\_] yes [\_\_\_\_] no
12. Computer/Printer/Fax, etc. [\_\_\_\_] yes [\_\_\_\_] no
13. Adult bicycle [\_\_\_\_] yes [\_\_\_\_] no
14. Motorbike [\_\_\_\_] yes [\_\_\_\_] no
15. Car/ other vehicle [\_\_\_\_] yes [\_\_\_\_] no
16. What type of toilet facilities do you have at home?
17. None [\_\_\_]
18. Hole in the earth [\_\_\_]
19. Pit latrine, shared with other houses [\_\_\_]
20. Pit latrine, only your house uses (not shared) [\_\_\_]
21. Flush toilet, shared with other households [\_\_\_]
22. Flush toilet not shared with other households [\_\_\_]
23. 7. Other [\_\_\_\_] (please specify)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
24. What is your main source of water for drinking (where you usually get your drinking water from)?
25. River/Spring [\_\_\_]
26. Tank/Drum [\_\_\_]
27. Standpipe [\_\_\_]
28. Yard pipe (outside of house) [\_\_\_]
29. Pipe inside of house [\_\_\_]
30. Bottled water [\_\_\_]
31. Do you exercise by doing any of the following activities? (tick all that apply)
    * Playing a sport (e.g. netball, swimming, track and field) [ ]
    * Jogging [ ]
    * go to a gym [ ]
    * Walking (e.g. around a track) [ ]
    * No, I don’t exercise [ ]
32. If yes, how many days per week do you exercise? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
33. On each day, how much time do you spend exercising on average

less than 1 hour  [ ]

1 hour [ ]

2 hours [ ]

3 hours or more [ ]

1. What do you think of your weight now?

I want to lose weight [ ] I want to put on weight [ ] I think my weight is fine [ ]

1. Are you trying to control your weight? Yes [ ] No [ ]
2. If you are trying to control your weight, what is your reason for doing so?

a. appearance (how you look) [ ]

b. health [ ]

c. both (a) and (b) [ ]

# Appendix 16

Disordered eating behaviours and attitudes among adolescents with overweight/obesity in the Paediatric endocrine clinic at the UHWI

This questionnaire will ask you questions about how you eat, how you feel about eating and food, about your feelings and what you think about yourself. There is no wrong or right answer so just answer as honestly as you can.

What is your date of birth

Are you male or female ? Female [\_] Male [\_\_]

Where do you live? Urban area [\_] Rural area [\_\_]

Are your parents? (Tick the relevant option)

Living together most of the time (at least 3 days out of the week for most weeks) [\_\_\_]

Living separately [\_\_\_]

One of my parents is dead [\_\_\_]

Both of my parents are dead [\_\_\_]

Don’t know where my parents are [\_\_\_\_]

If living together are your parents? Married [\_\_\_] Common-Law [\_\_\_]

If living separately are your parents?

Married [\_\_\_] Visiting [\_\_\_] No relationship [\_\_\_]

Which of the following items do you have in your house that are working? (tick all that apply)

Living room set [\_\_\_\_] yes [\_\_\_\_] no

Stove (gas/ electric) [\_\_\_\_] yes [\_\_\_\_] no

Refrigerator or freezer [\_\_\_\_] yes [\_\_\_\_] no

Microwave oven [\_\_\_\_] yes [\_\_\_\_] no

Air conditioner [\_\_\_\_] yes [\_\_\_\_] no

Land line telephone [\_\_\_\_] yes [\_\_\_\_] no

Radio [\_\_\_\_] yes [\_\_\_\_] no

Stereo equipment/component set [\_\_\_\_] yes [\_\_\_\_] no

TV [\_\_\_\_] yes [\_\_\_\_] no

Cable [\_\_\_\_] yes [\_\_\_\_] no

Computer/Printer/Fax, etc. [\_\_\_\_] yes [\_\_\_\_] no

Adult bicycle [\_\_\_\_] yes [\_\_\_\_] no

Motorbike [\_\_\_\_] yes [\_\_\_\_] no

Car/ other vehicle [\_\_\_\_] yes [\_\_\_\_] no

What type of toilet facilities do you have at home?

None [\_\_\_]

Hole in the earth [\_\_\_]

Pit latrine, shared with other houses [\_\_\_]

Pit latrine, only your house uses (not shared) [\_\_\_]

Flush toilet, shared with other households [\_\_\_]

Flush toilet not shared with other households [\_\_\_]

7. Other [\_\_\_\_] (please specify)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What is your main source of water for drinking (where you usually get your drinking water from)?

River/Spring [\_\_\_]

Tank/Drum [\_\_\_]

Standpipe [\_\_\_]

Yard pipe (outside of house) [\_\_\_]

Pipe inside of house [\_\_\_]

Bottled water [\_\_\_]

Do you exercise by doing any of the following activities? (tick all that apply)

Playing a sport (e.g. netball, swimming, track and field) [ ]

Jogging [ ]

go to a gym [ ]

Walking (e.g. around a track) [ ]

No, I don’t exercise [ ]

If yes, how many days per week do you exercise? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

On each day, how much time do you spend exercising on average

less than 1 hour  [ ]

1 hour [ ]

2 hours [ ]

3 hours or more [ ]

What do you think of your weight now?

I want to lose weight [ ] I want to put on weight [ ] I think my weight is fine [ ]

Are you trying to control your weight? Yes [ ] No [ ]

If you are trying to control your weight, what is your reason for doing so?

a. appearance (how you look) [ ]

b. health [ ]

c. both (a) and (b) [ ]

PLEASE READ THIS BEFORE ANSWERING THE NEXT SET OF QUESTIONS

Some of these questions will ask about any binges that you might have had during the past four weeks (28 days).

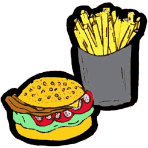
A binge has two parts: 1) eating a really big amount of food given the situation and 2) feeling out of control.

What is a “really big amount of food?”

A really big amount of food is much more than most people would eat in the same situation. Some examples might be: 1) eating two full meals (such as two plates of salad/first course, two main dishes, two desserts, etc.); 2) eating three main courses (such as 3 plates of pasta); or 3) eating a really big amount of one food (such as 4 brownies) or a few different kinds of foods (such as a big bowl of ice cream, 8 cookies, a donut, and a handful of candy). Below are some pictures of a really big amount of food to help you.

[](http://www.clipsahoy.com/webgraphics2/as3261.htm) A close-up of a pizza

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# REALLY BIG NOT REALLY BIG

What is “feeling out of control?”

Feeling out of control while eating might mean different things for different people. It may mean

that you’re: 1) feeling DRIVEN to eat; 2) feeling like you JUST cannot stop eating; 3) feeling like you’re not able to stop yourself from starting to eat in the first place; or 4) feeling like you shouldn’t even try to control your eating because you know that, no matter what, you’re going to eat too much. Some kids describe feeling out of control like a ball rolling down a hill, that it just keeps going and going.

Examples of a binge:

REALLY BIG AND OUT OF CONTROL. After school one evening, Jenny ate 2 pieces of chicken, a large package of frozen vegetables, 3 cups of rice, 1/2 of a coffee cake and a piece of fruit. This is a really big amount of food. While she ate, Jenny felt like she JUST could not stop eating, ate more quickly than usual, and ate until she felt really, really full. Afterwards Jenny was very upset about how much she’d eaten, and said she felt sad, guilty, and mad at herself.

Examples that are not binges either because they are too small, or the person does not feel out of control while eating:

REALLY BIG BUT NOT OUT OF CONTROL. A few times a week, Katie ate lunch at

McDonald’s with 2 friends. Her usual order was a Big Mac, a fish fillet sandwich, 2 large orders of fries, and a large chocolate shake. This is a really big amount of food. Although she ate more than her friends did and knew she was eating a lot of high-fat food, she didn’t feel like she JUST could not stop eating, and she did not feel upset afterwards about how much she’d eaten.

OUT OF CONTROL BUT NOT REALLY BIG. For lunch one day, Joey had a ham and cheese sandwich with mayonnaise on a roll, a small bag of potato chips, a candy bar, and a Diet Coke. Joey felt out of control because he’d planned to have turkey on whole wheat with lettuce and tomato plus a piece of fruit for dessert, but couldn’t stop himself from changing his order. Although this was a big meal, it was not really big, so we wouldn’t consider it a binge.

OUT OF CONTROL BUT NOT REALLY BIG. Lizzie ate 2 donuts someone brought to homeroom one morning. She had started a diet that day and planned to skip breakfast. At first, Lizzie said no to the donuts, but after everyone else had gone to their other classes she snuck back into homeroom and very quickly ate the donuts so no one would see her eating. She felt very guilty and embarrassed after and hated feeling so out of control of her eating, promising to start dieting again the next day. Although Lizzie felt bad about eating the donuts, this was not a really big amount of food, so it would not be considered a binge.

Instructions: These questions are about the PAST FOUR WEEKS ONLY (28 days). In order to help you remember your eating patterns over the past 28 days, try to think of any events that might have changed the way you normally eat, such as holidays, parties, vacations, or stressful events (such as a school project being due, or getting in a fight with your parents). Please read each question carefully. Please answer all of the questions. Thank you very much!

Questions 16 to 32 Please tick the number that is most like your behaviour. Remember that the questions are only about the past four weeks (28 days).

ON HOW MANY OF THE PAST 28 DAYS. . .:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| On how many of the past 28 days have you/has | None of  the days | A few of  the days  (1-5 days) | Less than  half the days (6-12 days) | Half the  Days  (13-15days) | More than  half the days  (16-22 days) | Most of  the days  (23-27 days) | Every  day |
| On purpose been trying to cut down on what you eat to change your shape or weight? (tick one) |  |  |  |  |  |  |  |
| Gone for most of the day (8 hours or more) without eating anything in order to change your shape or weight? ( tick one ) |  |  |  |  |  |  |  |
| Tried not to eat any foods that you like in order to change your shape or weight? (tick one ) |  |  |  |  |  |  |  |
| Tried to stick to strict rules about your eating in order to change your shape or weight; for example, only letting yourself eat a certain type or amount of food, or certain number of calories? (Tick one) |  |  |  |  |  |  |  |
| Thinking about food or calories made it hard for you to pay attention to things you are interested in (for example, watching TV, reading, or playing on the computer)? (tick one) |  |  |  |  |  |  |  |
| Been afraid of losing control over eating (afraid that you won’t be able to stop eating)? (tick one)  Felt like you did lose control over your eating? (tick one) |  |  |  |  |  |  |  |
| Binged (eaten a really big amount of food and felt that you had lost control over your eating)? (tick one) |  |  |  |  |  |  |  |
| Eaten in secret? Do not count binges. (tick one) |  |  |  |  |  |  |  |
| Wanted a completely flat stomach (as flat as a board)? (tick one) |  |  |  |  |  |  |  |
| Wanted your stomach to be empty – to not have any food in it at all? (tick one) |  |  |  |  |  |  |  |
| Thinking about your shape or weight made it hard for you to pay attention to things you are interested in (for example, watching TV, reading, or playing on the computer)? (tick one) |  |  |  |  |  |  |  |
| Been scared that you might gain weight? (tick one) |  |  |  |  |  |  |  |
| Felt fat? (tick one) |  |  |  |  |  |  |  |
| Had a very strong wish to lose weight? (tick one) |  |  |  |  |  |  |  |
| Felt guilty (that you've done something wrong) because of how it might change your shape or weight? Do not count binges (tick one) |  |  |  |  |  |  |  |

Questions 33-39: Please look at the first two pages for help answering these questions. Please tick the number that is most like your behaviour. Remember that the questions only refer to the past four weeks (28 days).

OVER THE PAST 28 DAYS. . .

|  |  |  |  |
| --- | --- | --- | --- |
| Over the past 28 days | Yes | NO | Number of times this happened |
| Have there been times when you have eaten a really big amount of food, compared to what other kids your age would eat in the same situation? |  |  |  |
| On how many of these times did it feel like you had lost control while eating? |  |  |  |
| Have you had times where you felt that you had lost control over your eating, but have not eaten a really big amount of food? |  |  |  |
| Have you made yourself throw up? |  |  |  |
| Have you taken any medicines that make you go to the bathroom (have a bowel movement)? |  |  |  |
| Have you taken water pills (pills that make you urinate or pee)? |  |  |  |
| Have you exercised very hard in order to change your shape or weight (and not just for fun)? |  |  |  |

Please mark the spot on the line that best describes how you feel. Remember that the questions only refer to the past four weeks (28 days). For these questions, when we say

“weight,” we mean the number on the scale, and when we say “shape,” we mean what you see in the mirror.

OVER THE PAST 28 DAYS. . .:

Over the past 28 days, has your weight (the number on the scale) made a difference in how you think about (judge) yourself as a person? (mark off on the line)

Not at all A little bit A lot Very, very much

Over the past 28 days, has your shape (what you see in the mirror) made a difference in how you think about (judge) yourself as a person? (mark off on the line)

Not at all A little bit A lot Very, very much

Over the past 28 days, how much would it upset you if you had been asked to weigh yourself once a week (no more and no less) for the next four weeks? (mark off on the line)

Not at all A little bit A lot Very, very much

Over the past 28 days, how unhappy have you been with your weight (the number on the scale)? (mark off on the line)

Not at all A little bit A lot Very, very much

Over the past 28 days, how unhappy have you been with your shape (what you see in the mirror)? (mark off on the line)

Not at all A little bit A lot Very, very much

Over the past 28 days, how thin have you wanted to be? (mark off on the line)

Not at all A little bit A lot Very, very thin

Over the past 28 days, how worried have you been about other people seeing you eat? Do not count binge eating. (mark off on the line)

Not at all A little bit A lot Very, very much

Over the past 28 days, how uncomfortable or embarrassed have you felt seeing your own body (for example, in the mirror, reflected in a store window, getting undressed, having a bath or shower)? (mark off on the line)

Not at all A little bit A lot Very, very much

Over the past 28 days, how uncomfortable or embarrassed have you felt about other people seeing your shape or figure (for example, getting changed for swimming, in the swimming pool, wearing clothes that show your shape)? (mark off on the line)

Not at all A little bit A lot Very, very much

Have your eating and your feelings about your shape and weight over the past four weeks been about the same as the past year? (Please circle)

No Yes

If no, how has the past year been different from the past four weeks?

For this next set of questions - please read each sentence and tick the option that best indicates how often you find yourself feeling or experiencing what is described.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  | Definitely true | Mostly true | Mostly false | Definitely false |
| 1) I start to eat when I feel anxious |  |  |  |  |
| 2) When I feel sad, I often eat too much |  |  |  |  |
| 3) When I feel tense or ‘‘wound up’’, I often feel I need to eat |  |  |  |  |
| 4) When I feel lonely, I console myself by eating |  |  |  |  |
| 5) If I feel nervous, I try to calm down by eating |  |  |  |  |
| 6) When I feel depressed, I want to eat |  |  |  |  |

We will now ask you a few questions about how you have been feeling over the last two weeks. Remember there is no wrong or right answer, just answer as honestly as you can.

Over the last two (2) weeks how often have you been bothered by the following problems?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Not at all | Several days | More than half the days | Nearly every day | |
| Feeling down, depressed, irritable, or hopeless |  |  |  |  |
| Little interest or pleasure in doing things |  |  |  |  |

Over the last 2 weeks, how often have you been bothered by any of the following problems?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Not at all | Several days | More than half the days | Nearly every day | |
| Feeling nervous, anxious or on edge? |  |  |  |  |
| Not being able to stop or control worrying? |  |  |  |  |

Over the past week have you felt anxious? Yes No

Over the past week have you felt depressed? Yes No

We will now ask you some questions about how you feel about yourself .

Please tick the box that shows how much you agree with each statement.

|  | Agree  A lot | Agree | Disagree | Disagree A lot |
| --- | --- | --- | --- | --- |
| On a whole I am satisfied with myself. |  |  |  |  |
| At times I think I am no good at all. |  |  |  |  |
| I feel that I have many good qualities. |  |  |  |  |
| I can do things as well as most other people. |  |  |  |  |
| I feel I do not have much to be proud of in my life. |  |  |  |  |
| I certainly feel useless at times. |  |  |  |  |
| I feel that I am a person of worth, at least equal to other people. |  |  |  |  |
| I wish I could have more respect for myself. |  |  |  |  |
| All in all I tend to feel like a failure. |  |  |  |  |
| I think positively about myself. |  |  |  |  |

We will now ask you about how you deal with problems when they come up . Please tick the box below the statement that best describes how the statement applies to you .

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Mostly true about me | Somewhat true about me | A little true about me | Not true about me | |
| When dealing with a problem, I spend time trying to understand what happened. |  |  |  |  |
| When dealing with a problem, I try to see the positive side of the situation. |  |  |  |  |
| When dealing with a problem, I try to step back from the problem and think about it from a different point of view. |  |  |  |  |
| When dealing with a problem, I consider several alternatives for handling the problem. |  |  |  |  |
| When dealing with a problem, I try to see the humour in it. |  |  |  |  |
| When dealing with a problem, I think about what it might say about bigger lifestyle changes I need to make. |  |  |  |  |
| When dealing with a problem, I often wait it out and see if it doesn’t take care of itself. |  |  |  |  |
| When dealing with a problem, I often try to remember that the problem is not as serious as it seems. |  |  |  |  |
| When dealing with a problem, I often use exercise, hobbies, or meditation to help me get through a tough time. |  |  |  |  |
| When dealing with a problem, I make jokes about it or try to make light of it. |  |  |  |  |
| When dealing with a problem, I take steps to take better care of myself and my family for the future. |  |  |  |  |
| When dealing with a problem, I make compromises. |  |  |  |  |
| When dealing with a problem, I work on making things better for the future by changing my habits, such as diet, exercise, budgeting, or staying in closer touch with people I care about. |  |  |  |  |

We will now ask you some questions about things that may have happened in your life that may have been difficult for you.

|  |  |  |
| --- | --- | --- |
| Did this ever happen to you as a child before you were 10 years old? | Yes | No |
| Did a parent or other adult in the household often or very often , swear at you , insult you , put you down and/or threaten you in any way that made you think that you might be physically hurt ? |  |  |
| Did a parent or other adult in the household often or very often ….push, grab . slap or throw something at you ? Or ever hit you so hard that you had marks or were injured ? |  |  |
| Did an adult or person at least 5 years older ever touch or fondle or have you touch their body in a sexual way?  Did anyone attempt or actually have oral, anal, or vaginal intercourse with you? |  |  |
| Did you often or very often feel that no one in your family loved you or thought you were important or special? Or your family didn't look out for each other, feel close to each other, or support each other ? |  |  |
| Did you often or very often feel that you didn't have enough to eat, had to wear dirty clothes, and had no one to protect you? Or your parents were too drunk or high to take care of you or take you to the doctor if you needed it ? |  |  |
| Was your mother or stepmother often, or very often pushed, grabbed, slapped; or had something thrown at her? Sometimes, often, or very often kicked, bitten, hit with a fist or something hard? Ever threatened or hurt by a knife or gun or other weapon? |  |  |
| As a child, did you ever live with anyone who was a problem drinker or alcoholic or lived with anyone who used street drugs ? |  |  |
| Was a household member ever depressed; mentally ill or sent to a mental hospital?  Has a family member ever attempted suicide ? |  |  |
| As a child were your parents ever separated ( didn’t live together ) or divorced ? |  |  |
| Did a household member ever go to prison , or was constantly in and out of jail ? |  |  |

Thank you for answering the questions so far. We are now at the last set of questions which will be asking you about how you think and feel about your body.

Question 97 is for females only ; males please go to question 98.

97. . Please read each of the following items carefully and tick Please tick the box that shows how much you agree with each statement.

|  | Definitely Disagree | Mostly  Disagree | Neither Agree Nor  Disagree | Mostly Agree | Definitely Agree |
| --- | --- | --- | --- | --- | --- |
| It is important for me to look  muscular. |  |  |  |  |  |
| It is important for me to look good in the clothes I wear |  |  |  |  |  |
| I want my body to look very thin. |  |  |  |  |  |
| I think a lot about looking muscular |  |  |  |  |  |
| I think a lot about my appearance. |  |  |  |  |  |
| I think a lot about looking thin. |  |  |  |  |  |
| I want to be good looking. |  |  |  |  |  |
| I want my body to look muscular. |  |  |  |  |  |
| . I don't really think much about my appearance. |  |  |  |  |  |
| I don't want my body to look  muscular |  |  |  |  |  |
| I want my body to look very lean. |  |  |  |  |  |
| It is important to me to be attractive |  |  |  |  |  |
| I think a lot about having very little body fat |  |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| I don't think much about how I look. |  |  |  |  |  |
| I would like to have a body that looks very muscular |  |  |  |  |  |
| . I feel pressure from family members to look thinner |  |  |  |  |  |
| . I feel pressure from family members to improve my appearance. |  |  |  |  |  |
| Family members encouraged me to decrease my level of body fat. |  |  |  |  |  |
| . Family members encourage me to get in better shape. |  |  |  |  |  |
| My peers encourage me to get thinner. |  |  |  |  |  |
| . I feel pressure from my peers to improve my appearance. |  |  |  |  |  |
| . I feel pressure from my peers to look in better shape. |  |  |  |  |  |
| I get pressure from my peers to decrease my level of body fat. |  |  |  |  |  |
| Significant others encourage me to get thinner. |  |  |  |  |  |
| I feel pressure from significant others to improve my appearance. |  |  |  |  |  |
| I feel pressure from significant others  to look in better shape. |  |  |  |  |  |
| I get pressure from significant others to decrease my level of body fat |  |  |  |  |  |
| I feel pressure from the media to look  in better shape. |  |  |  |  |  |
| I feel pressure from the media to look  thinner. |  |  |  |  |  |
| I feel pressure from the media to  improve my appearance. |  |  |  |  |  |
| I feel pressure from the media to  decrease my level of body fat. |  |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| It is important for me to look  muscular. |  |  |  |  |  |
| I want my body to look very thin |  |  |  |  |  |
| I think a lot about looking muscular |  |  |  |  |  |
| I think a lot about looking thin |  |  |  |  |  |
| I want my body to look muscular. |  |  |  |  |  |
| . I don't really think much about my appearance. |  |  |  |  |  |
| I don't think much about how I look. |  |  |  |  |  |
| I would like to have a body that looks very muscular |  |  |  |  |  |
| . I feel pressure from family members to look thinner |  |  |  |  |  |
| . I feel pressure from family members to improve my appearance. |  |  |  |  |  |
| Family members encourage me to get in better shape. |  |  |  |  |  |
| . I feel pressure from family members to be more muscular |  |  |  |  |  |

For Males ( Females please complete the previous section )

We will now ask you questions about the way you think about your body

86. Directions: Please read each of the following items carefully and tick the box beside the number that best reflects your agreement with the statement.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Family members encourage me to increase the size or definition of my muscles |  |  |  |  |  |
| . I feel pressure from my peers to improve my appearance. |  |  |  |  |  |
| . I feel pressure from my peers to look in better shape. |  |  |  |  |  |
| I get pressure from my peers to be more muscular |  |  |  |  |  |
| My peers encourage me to increase the size or definition my muscles |  |  |  |  |  |
| I feel pressure from significant others to improve my appearance. |  |  |  |  |  |
| I feel pressure from significant others  to look in better shape. |  |  |  |  |  |
| I get pressure from significant others to decrease my level of body fat |  |  |  |  |  |
| I feel pressure from significant others to be more muscular. |  |  |  |  |  |
| I feel pressure from significant others to increase the size or definition of my  muscles. |  |  |  |  |  |
| I feel pressure from the media to look in better shape. |  |  |  |  |  |
| I feel pressure from the media to look  thinner. |  |  |  |  |  |
| I feel pressure from the media to  improve my appearance. |  |  |  |  |  |
| I feel pressure from the media to  decrease my level of body fat. |  |  |  |  |  |
| I feel pressure from the media to be  more muscular. |  |  |  |  |  |
| I feel pressure from the media to  increase the size or definition of my  muscles. |  |  |  |  |  |

Thank you for your honesty and courage in sharing your experiences and thoughts with us!