Project Title:
Program Evaluation of Youth Participating In The Eating Disorders Program At Lakeridge Health Oshawa

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Executive Summary

The Eating Disorders Program at Lakeridge Health Oshawa is an outpatient service funded by the Ministry of Health and Long-term Care (MOHLTC) since February, 2001. It is a service that falls under the Mental Health and Pinewood Program of Lakeridge Health. The program provides specialized outpatient assessment and treatment services to adolescents and adults with eating disorders and their families in the Durham Region.

The program provides services to individuals and families affected by Anorexia Nervosa, Bulimia Nervosa, Binge Eating Disorder and Eating Disorder Not Otherwise Specified. Assessment and treatment are provided to adolescents aged 11-18 years, and adults, 18 years and over, and their families. A core multidisciplinary assessment and treatment team uses a specialized multi-modal approach to treatment that is evidence-based.

Program evaluation is carried out to identify client demographics and characteristics, examine the distribution of eating disorders among clients, as well as their functioning on a number of variables related to eating disorder symptomatology and presentation. In addition, evaluation is carried out to determine changes over time in functioning as a result of treatment carried out. Psychometric packages are administered to clients at admission and at various points during treatment, often after a group intervention. The questionnaires are then scored and the information is transferred to a database. In addition, all clients participate in a structured clinical interview which assists in the identification and communication of a clinical diagnosis and related functioning information that is included in the database. The database includes demographics, some clinical information about family variables, involvement in other treatment services and intensive services, and clinical outcome measures. All clients sign a program evaluation form to consent to their data being tracked on the database. Adolescent and adult data are tracked separately.

While every effort has been made to keep the database up to date, this has been a great challenge for the program due to limited staff resources and lack of funds to perform this role. In essence there have been no dedicated funds to allow for the performance of program evaluation activities. Yet, the program recognizes how vital this activity is in terms of informing services about the effectiveness of treatment provided. The grant request was made to facilitate the set up of an ongoing data collection system and to assist the program with building capacity to be able to carry out program evaluation on an ongoing basis that will help to inform program planning and effectiveness.

Findings of the evaluation indicated that most of the clients were female, in their mid teens, and are Caucasian. As well, most families assessed were nuclear in construction. Clients seen in our program represented a mix of eating disorder diagnoses. Relatively equal numbers of clients presented with anorexia nervosa and EDNOS. Somewhat fewer youth presented with bulimia nervosa. The majority of adolescents were not receiving any other treatment during involvement in our program aside from being monitored by their family physician which was a requirement of the program. A small number of youth
reported involvement in intensive eating disorder services prior to attendance in our program. There were a number of youth who dropped out at assessment. However most youth attended beyond the assessment phase and were found to attend 8 sessions. In addition, 50% of the adolescents seen attended 10 or more session. Data also revealed that family body image issues, family food issues and family exercise issues were present in some families. Examining age differences at baseline assessment, the only significant differences were that younger teens were found to have a lower ideal weight, a higher self-esteem and were less likely to stop engaging in activities they previously enjoyed.

An exploration of differences on the clinical outcome measures at baseline in relation to weight status revealed a number of differences between underweight youth and average weight youth as defined by BMI categories. Specifically, the underweight group reported higher global self-esteem, a lower tendency to be preoccupied with dieting and weight loss, greater satisfaction with their body size and shape, a greater sense of control, competence and worthiness, less depressive symptomatology overall, less negative mood, a more positive self-evaluation, and greater ability to participate in pleasurable activities than youth who are average weight. They were also more satisfied with the body shape and size than those who are overweight.

In assessing for clinical outcome differences between admission and after a period of treatment, the only significant difference that emerged for this group was a reduction in negative mood over time. It is, however, important to note that the sample size for this analysis was small and that the results are preliminary and inconclusive.

Analyses were also carried out to explore the predictability of EDNOS which is a commonly diagnosed eating disorder that has been largely neglected in outcome studies and because a significant number of youth in our program received this diagnosis. Findings indicated that adolescents with a diagnosis of EDNOS were more likely to participate in family therapy than those who did not receive this diagnosis. In addition, the results reflected that youth diagnosed with EDNOS achieved higher scores on an index of symptoms that are characteristic of bulimia tendencies, and higher body dissatisfaction scores than those without this diagnosis.

It was encouraging that while several youth dropped out of the program at assessment, the majority of adolescents who were seen in the program attended at least some treatment sessions and that more than half of them participated in at least 10 sessions. This reflects that many youth who are referred for services do choose to participate in treatment, despite the many challenges and ambivalence they are noted to face in doing so. Moreover, it was beneficial to have a summary of the client characteristics to help us define the population we are serving in our region. In addition, client characteristics can help to determine areas for future program development and planning. For example, knowing that there are many families who struggle with dieting, exercise and body image issues suggests that more programming must focus on how these issues impact different members of the family and on how to address these issues with the parents and the youth more directly.
Overall, given the challenges of carrying out outcome analyses in a clinical setting, we were faced with a small sample size for pre and post comparisons, challenges in scheduling repeated assessment sessions, missing information on family and other descriptive variables resulting in smaller and unequal group sizes when examining client characteristics, and the lack of control of a number of variables that influence outcome and predictability. Consequently, the findings are not generalizable and are considered preliminary.

This program evaluation also did not include evaluation of qualitative differences between those who dropped out early versus those who remained in treatment. It will be important to distinguish between those who drop out and those who continue to be involved in treatment, in order to better understand the reasons why youth cease treatment prematurely. Moreover, gathering this information will be helpful to identify those at risk of dropping out so as to plan treatment to address the factors that might be interfering with commitment to treatment.

It is recommended that ongoing and future efforts in relation to the assessment of clinical outcomes need to be more rigorous in relation to obtaining information. Greater specificity and standardization of the assessment of family variables are indicated. Moreover, it will be important to determine if the findings replicate over time. With a larger database, and multiple points of assessment, this will be possible.

In the future, it will also be beneficial to continue to gather information about race and ethnicity of clients as this is a major gap in outcome research. This will help to further define the characteristics of the clients seen in our program, and aid in the continued study of the clinical profile of the youth. In addition, this will facilitate exploration of treatment efficacy in relation to race or ethnic background.

A need for large multisite randomized controlled trials has been identified as well. There are several benefits to this approach which include facilitating recruitment of clients, enhancing statistical power, enabling meaningful subgroup analyses, helping to control high drop out rates and improving the generalizability of findings. Moreover, this approach will allow for the pooling of data that can make it possible for networks of clinicians to study patients, treatments and outcomes in typical clinical settings.
Purpose of the Program Evaluation

The primary goals of this project were to hire personnel to score and record outcome data, to update the database that is used for the purpose of tracking referrals, demographic information and clinical outcomes, and to carry out statistical analyses for the purposes of presenting clinical descriptive information about the clients and examining clinical changes in the outcome measures over time. These analyses would further inform and contribute to future program planning and development as well as to the refinement of future evaluation initiatives.

The specific objectives included the following:

1. To increase qualified personnel resources to be able to update the database and carry out descriptive and clinical outcome analyses.
2. To purchase a statistical package that will facilitate statistical analyses. The Statistical Package for the Social Sciences (SPSS) is the package of choice for descriptive and clinical outcome analyses.
3. To purchase additional psychometric measure protocols that will enable outcome data to be collected. These measures include the Eating Disorders Inventory 3rd edition (EDI-3; Garner, 2004), Children’s Depression Inventory (CDI; Kovacs, 1992), and the Beck Depression Inventory (BDI; Beck, Steer, & Brown, 1996).
4. To provide a summary report of the statistical analyses that will be used to identify clinical outcomes of youth participating in the program and for further program planning and development to enhance treatment outcomes.

Description of the Program

The Eating Disorders Program at Lakeridge Health Oshawa is a service funded by the Ministry of Health and Long-Term Care since February, 2001. It is a service that falls under the Mental Health and Pinewood Program of Lakeridge Health. This program funding is annualized and its purpose has been to establish and run a specialized outpatient assessment and treatment program for adolescents and adults with eating disorders and their families in the Durham Region. The program is also part of the network of specialized eating disorder services across the province of Ontario. It services residents in the Central East Local Health Integration Network (CELHIN) that is the second largest Local Health Integration Network (LHIN) in the province of Ontario based on population. Durham Region has one of the largest proportions of young people in the province.

The mission of the Eating Disorders Program at Lakeridge Health together with the other like programs funded in the province has been to establish a seamless continuum of specialized interventions for individuals who have, or are at risk of developing, an eating disorder and their families. This continuum is to reflect a range of interventions across the province from primary prevention to tertiary care. The continuum of interventions requires integration among health, children’s and adult’s mental health and education services.
The program provides specialized services to individuals and families affected by Anorexia Nervosa, Bulimia Nervosa, Binge Eating Disorder (BED) and Eating Disorder Not Otherwise Specified (EDNOS) (American Psychiatric Association [APA], 1994). Assessment, education, support and treatment are provided to adolescents aged 11-18 years, and adults, 18 years and over, and their families. A core multidisciplinary assessment and treatment team uses a specialized multi-modal approach to treatment that is evidence-based.

Referrals to the program are largely made by community physicians in Durham Region, although the program accepts referrals from other services within Lakeridge Health to facilitate continuity of treatment once a person has entered the health care system of our organization. It is also a requirement of the program that every client receive ongoing medical monitoring while in the program and also that they are medically stable during involvement. Medical monitoring is largely provided by referring family physicians.

The first component of the assessment is a psychological assessment conducted by one of the team psychologists. As part of the psychological assessment, that includes a structured clinical interview, a questionnaire package is administered to clients. The information from this package is used to assist in the assessment process as well as for program evaluation purposes. When the psychological assessment is completed, the team dietitian is seen for a nutritional assessment, and then the team social worker carries out a family psychosocial assessment. Once the multidisciplinary assessment is completed, treatment recommendations are discussed with the client and a treatment plan is made.

Treatment services include nutrition counselling/therapy, family therapy, individual psychotherapy and group psychotherapy. For the past year, the focus of the program has been to provide primarily group treatment and individual nutrition counseling, and time-limited family and individual psychotherapy where group treatment may not be suitable or where additional needs may arise. The focus on group treatment has come about due to the reported effectiveness of group treatment (Polivy & Federoff, 1997) and also as a means of helping to increase accessibility to services in the program.

Specific psychotherapeutic modalities of the program include cognitive-behavioural therapy, interpersonal and systems model therapy. Nutrition counseling includes nutrition education that focuses on the principles of normal, healthy eating, discussing food myths, understanding portion sizes, understanding and maintaining a healthy body weight, medical and psychological complications in relation to nutrition and managing the eating environment. Services are carried out primarily on an outpatient basis; however, program staff also provides limited inpatient consultation. The goals are to restore healthy eating behaviour, to restore weight in those under their ideal weight to ideal weight levels, to monitor medical functioning and intervene when the individual is at risk, and to restore social, emotional, and academic functioning to more adaptive levels. As well, the program facilitates linkages with other community and hospital resources for ongoing support and tertiary care.
Target Population

Clients served by the program are adolescents aged 11-18 years, and adults, 18 years and over, and their families. The program at Lakeridge is one of the few that provides services to both adolescents and adults. It, therefore, has the advantage to be able to provide a smooth continuum of services to youth approaching adulthood during this important transitional period. Most other services in the province provide treatment to either adolescents or adults. As such there is likely to be an interruption of service during the transitional period from adolescence to adulthood. Moreover, separate referrals to an adult service are often required and there is a waiting period to receive services during which the young person may not be receiving treatment.

For the purposes of this project, data were collected only for adolescents up to their 19th birthday or younger is presented.

The information from this project will be beneficial to the community, clients and their families receiving treatment, and other service providers who assess and treat individuals with eating disorders, or who refer these individuals for assessment and treatment, including both medical and non medical professionals. This information will also serve as important knowledge for the MOHTLC and the LHINs who are responsible for the funding of eating disorder services as well as addressing accessibility and integration issues in relation to these services. Finally, researchers in the field of eating disorders may find this information of benefit towards a greater understanding of this clinical population, and to further exploring their study of the efficacy and effectiveness of treatment. It has been noted that initiatives that help clinicians study patients, treatments and outcomes in clinical settings help to facilitate the transfer of research findings into clinical practice (Maguire, Surgenor, Abraham & Beumont, 2003).

Relevant Research

Epidemiology

Eating disorders are multidimensional and most prevalent in adolescents and young adults. As documented in The System Planning Framework for Eating Disorders, a paper submitted to the MOHLTC in 2000, about 95% of those with eating disorders are females between 12 and 25 years old, and 86% of individuals experience the onset of their eating disorder before the age of 20 (Central East Eating Disorders Planning Group [CEEDPG], 2000). While most studies have quoted male prevalence figures to be 5 to 10% of the clinical population, it has been argued by some researchers that a prevalence rate of 25-30% may actually be the case given that many men may go undiagnosed due to the stigma of eating disorders being a “women’s disease” (Anderson, Cohn & Holbrook, 2000, p.32). As cited in the American Psychiatric Association Practice Guidelines (APA, 2000), among adolescents, 19% to 30% of diagnosed cases of Anorexia Nervosa are reported to be male.
Incidence rates are reported to be conservative at 1% for anorexia nervosa and 3% for bulimia nervosa. The peak age of onset for anorexia nervosa has been reported to be between 15 and 19 years (Agency for Healthcare Research and Quality [AHRQ], 2006). For bulimia nervosa, the average age of onset has been documented to be about 18 years, although childhood onset has also been reported (Crow & Mitchell, 2001). It has been documented that few studies have provided estimates of the prevalence of bulimia nervosa among children and adolescents (AHRQ, 2006).

Clinical documentation has suggested that EDNOS is the most common eating disorder for which individuals seek professional treatment (AHRQ, 2006). The prevalence rates for EDNOS are quite variable (Keel, 2001). Binge eating disorder (BED) which is a category of EDNOS according to the DSM-IV Diagnostic Classification System (APA, 1994), has been the most studied category and studies have revealed that it occurs with relatively equal frequency among males and females (AHRQ, 2006; Anderson et al., 2000; Pope, Phillips & Olivardia, 2000). The figures for eating disorders are also believed to be an underestimation of the actual prevalence (Anderson et al., 2000; Costin, 1996; Pope et al., 2000; Van Hoeken, Seidell, & Hoek, 2003).

Clinical Outcomes in Mental Health

According to Lyons, Howard, O’Mahoney & Lish (1997), “A clinical outcome in mental health services is a characteristic of the consumer that, according to the theory and goals of services, can be reasonably expected to change as a result of the consumer’s receiving them” (p. 27). Lyons et al. (1997) also argue that there are, at a minimum, three important implications to this “conceptualization of clinical outcomes” (p. 27). The first is that clinical outcomes highlight consumer characteristics. That is, they tend to involve assessment of the person or persons participating in treatment and as such, the unit of analysis is the person, or couple or family seeking mental health services. Lyons et al. identify the second important implication to be that clinical outcomes focus on characteristics that change over time and that these characteristics need to be assessed through repeated measurement over the course of treatment. The third implication noted by Lyons et al. is that clinical outcomes stress that changes that occur should be due to the treatment received i.e., that “management of services requires a reasonable assumption that the service delivery is an agent of change” (p. 28) which is often difficult to demonstrate.

There has indeed been an increased interest in mental health outcomes for several decades (Lyons et al., 1997). Several factors have been noted to influence this interest including an increase in managed care and a need to demonstrate efficient and effective services in the face of rising healthcare costs as well as a need to control expenditures by achieving a balance between costs and effectiveness of care (Lyons et al., 1997). Moreover, increases in utilization of mental health services and issues of access and affordability have led to a demand of public accountability by consumers, consumer advocates and third party payers. That is, outcomes data facilitate the development of a knowledge base and guidelines that hold mental health providers and systems
accountable both to their clients and to the purchasers (e.g., employers) in relation to appropriateness, intensity and duration of services. In addition, Lyons et al. report that advances in information technology have allowed for more rapid access to data and more advanced data analysis. Finally, a shift to a “learning organization culture” (p. 3), i.e., from evaluation as external to service delivery to ongoing use of clinical outcomes and utilization data to develop, refine, and restructure the delivery of services has been key to increased focus on outcomes.

Clinical Outcomes in Eating Disorders

Eating disorders are often chronic and mortality rates are reported to range between 5-20% (APA, 2000; Garner, 1997; Mussell, Mitchell & Binford, 2001). In fact, anorexia nervosa is often a chronic condition, with the highest reported mortality rate of any psychiatric disorder (Agras, 2001; Garner, 1997). Moreover, it has been stated that in relation to the full spectrum of psychiatric disorders, the highest risk of premature death, from both natural and unnatural causes, are from substance abuse and eating disorders (AHRQ, 2006). Other mental health and health issues often associated with eating disorders include medical conditions and risk, dietary/nutrition concerns, symptoms of depression, anxiety, adjustment difficulties, a history of trauma, and substance abuse. (APA, 2000; AHRQ, 2006; Nielsen, 2001). Acute and chronic emotional, cognitive, physical, and behavioural dysfunction may occur (APA, 2000).

It has been reported that patients with bulimia nervosa who function well and have milder symptoms at the start of treatment, and who therefore are more likely to be treated as outpatients often have a better prognosis than those who function poorly and whose disordered eating symptoms are of sufficient severity to merit hospitalization (APA, 2000). Relapse rates between 30 to 50% have been documented after 6 months to 6 years of follow-up for clients treated successfully (e.g., Hsu & Sobkiewicz, 1989, as cited in APA, 2000). In a large study that examined long-term recovery 6 years after intensive treatment, 60% of clients were doing well, 29% maintained partial recovery, 10% were doing poorly and 1% had died (Fichter & Quadflieg, 1997, as cited in APA, 2000). There is strong evidence for the effectiveness of Cognitive Behavioural Therapy (CBT) with bulimia nervosa and Interpersonal Psychotherapy (IPT) has also been reported to be effective with this population (AHRQ, 2006). However, more rapid symptomatic change appears to occur with CBT according to a one-year follow-up study (AHRQ, 2006). As well, there is some promise reported for Dialectical Behavioural Therapy (DBT) and guided imagery for bulimia nervosa (AHRQ, 2006). The importance of working on patients’ motivation as a preliminary measure before starting treatment has gained significant attention and has been found to impact the rapidity of response to care (APA, 2000).

The percentage of individuals with anorexia nervosa who recover is modest. Overall about 2/3 of patients continue to have enduring morbid food and weight preoccupation and up to 40% have bulimic symptoms (APA, 2000). In a 10-15 year follow up study of adolescent patients hospitalized for anorexia nervosa, it was reported that time to

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recovery ranged from 57 to 79 months (Strober, Freeman, & Morrell, 1997; 1999, as cited in APA, 2000). Abraham (2000) also reported that even anorexia nervosa patients who respond well to treatment may take 4 or more years before they fully recover. She further noted that during this time, they often require further outpatient, medical, psychological and nutritional treatment. Moreover, according to Abraham, many do not fully recover and are in need of a variety of health care services for many years. Abraham has also suggested that those with anorexia be studied for up to 30 years in order to have a comprehensive account of the impact of their illness in terms of cost and the benefit of treatment.

The longer duration of anorexia nervosa has been reported to predict both short-term treatment failure as well as poor long-term outcome (Howard, Evans, Quintero-Howard, Bowers, & Andersen, 1999). Howard et al. (1999) documented that for females ranging in age from 16 to 33.5 years of age in their study, those who were 90% or less of their ideal body mass index (BMI = (weight (kg)/height (m)^2) at the time of transfer from inpatient to day hospital treatment were greater than 10 times more likely than someone above 90% of normal body mass index to fail day hospital treatment and to need inpatient readmission or experience a discharge against medical advice.

In a large scale review of the literature, individuals with eating disorders have been reported to be more likely to continue to have eating and comorbid psychiatric diagnoses years after treatment (AHRQ, 2006). In addition, high relapse rates have been reported for anorexia nervosa and bulimia nervosa. Moreover, there appears to be no evidence for a connection between the age of onset and chronicity of the eating disorder (AHRQ, 2006). This review also indicated that there was insufficient evidence for gender and sex differences.

According to the AHRQ (2006) review, there is no evidence that pharmacotherapy alone is beneficial for anorexia nervosa, and it even contributes to high dropout rates. For bulimia nervosa, there is good evidence that Fluoxetine reduces core symptoms of bingeing, purging and associated psychological features in the short-term. In addition, there is also some suggestion from studies that other drugs show some promise with bulimia nervosa as well (e.g., anticonvulsants, tricyclic antidepressants). There is some preliminary evidence for short-term benefits of some medication for BED e.g., selective reuptake inhibitors (SSRIs), norepinephrine uptake inhibitor, one tricylcic antidepressant. However, long-term follow-up data is lacking (AHRQ, 2006).

In terms of psychotherapy, there appears to be evidence that CBT helps to reduce risk of relapse for adults with anorexia nervosa after they have achieved weight restoration (AHRQ, 2006). For adults with a long history of anorexia nervosa, family therapy does not appear to be beneficial (AHRQ, 2006). However, for younger clients with anorexia nervosa, family therapy that focuses on parental involvement with refeeding is beneficial and leads to weight restoration and psychological improvement (AHRQ, 2006; Lock, Coutrier, Bryson & Agras, 2006). It is even suggested that for adolescent clients with a shorter duration of anorexia nervosa that family therapy may be superior to individual therapy (AHRQ, 2006).
The effectiveness of inpatient versus outpatient treatment for the long-term treatment of anorexia nervosa still remains largely unknown (Abraham, 2000). Reasons Abraham (2000) has proposed include the existence of too few randomized trials that compare inpatient and outpatient treatment, inadequate information to evaluate effectiveness and the importance of evaluating cost of treatment (inpatient or outpatient) relative to outcomes. Abraham argues that “treatment of anorexia nervosa is effective if weight maintenance in the normal range is achieved, whether or not treatment includes inpatient care” (p.67) and that, in terms of cost, “partial recovery is no recovery” (p. 67). Moreover, it has been noted elsewhere (AHRQ, 2006), that the cost-effectiveness of interventions for eating disorders has rarely been assessed or addressed and that it will be important for future studies to include information about cost and cost-effectiveness analyses, particularly for those interventions that consistently show benefits.

While the study of comparative cost-effectiveness of various treatments for psychiatric disorders is minimal, and large scale randomized control studies of eating disorders are scarce, the costs of therapy for anorexia nervosa have been reported to be higher than those for schizophrenia (Agras, 2001). Moreover, Agras (2001) reports bulimia nervosa and binge eating disorder tend to be equally or more expensive to treat than obsessive-compulsive disorder. Agras has also reported that while antidepressant medication has been found to be cost-effective in the short term, there tend to be higher relapse rates with this medication compared to CBT, particularly in the treatment of bulimia nervosa.

In regard to BED, there have tended to be mixed results in the literature as to whether initial specific eating disorder symptoms, general psychopathology and self-esteem are related to outcome (e.g., Agras, Telch, Amow, Eldredge & Mornell, 1997; Loeb, Wilson, Gilbert & Labouvie, 2000, as cited in Hilbert, Stein, Welch, Saelens, Mockus, Matt et al., 2007). According to the literature reviewed by Hilbert et al. (2007), people with BED who have high negative affectivity have a notable poor treatment response. It has also been reported that higher initial binge eating (Loeb et al., 2000, as cited in Hilbert et al., 2007) and more severe overeating behaviour (Carter & Fairburn, 1998, as cited in Hilbert et al., 2007) tend to predict poor outcome post treatment for those with BED. In addition, earlier age of onset of binge eating, binge eating preceding the first dieting episode (Agras, Telch, Amow, Eldredge, Detzer, Henderson, et al., 1995, as cited in Hilbert et al., 2007) and being a younger age during treatment (Agras et al., 1997, as cited in Hilbert et al., 2007) have been linked with poor treatment response. By contrast, initial weight status has not been predictive of outcome (Loeb et al., 2000, as cited in Hilbert et al., 2007). For BED, CBT has been noted to decrease binge eating and DBT has shown some promise as well (AHRQ, 2006).

Hilbert et al. (2007) noted that inconsistent results among the few predictor studies carried out for BED had to do with a lack of statistical power, differences in treatment modalities, length of follow up, and definition and assessment of outcome. In their study, they were interested in examining patient characteristics central to CBT and IPT treatment models (e.g., dietary restraint or interpersonal problems, respectively). Moreover, they also wanted to investigate within-treatment processes as predictors (e.g.,
interpersonal problems, therapeutic alliance, and group cohesion). Hilbert et al. carried out a randomized-controlled trial of psychotherapy for individuals with BED. Participants received either CBT or IPT after being stratified by sex. There was a dropout rate of about 10% and the analyses were based on completers of treatment. They found that a greater degree of interpersonal problems at the outset of treatment or at midtreatment predicted poor treatment outcome at the end of treatment and at 1 year follow-up. Moreover, they found that greater shape and weight concerns among those with low interpersonal problems predicted poor posttreatment outcome. As well, lower group cohesion in the early stages of treatment predicted poor outcome in the long-term (Hilbert et al., 2007). These researchers further noted that clients with a higher level of interpersonal dysfunction and greater degree of general psychopathology and personality disturbance tended to report less group cohesion. Thus, Hilbert et al. suggested that interpersonal problems and shape and weight concerns appear to be differentially important in the maintenance of binge eating among subgroups of clients with BED and that special interventions focused on the respective issues should be considered for these subgroups and assessed for effectiveness.

In a study that investigated help-seeking behaviour and satisfaction with care, women with eating disorders that were categorized in three groups (anorexia nervosa with bulimic features, bulimia nervosa and subdiagnostic eating disorder) were reported to frequently seek out professional (namely individual, behaviour and group therapy; nutrition therapy) as well as nonprofessional (Overeater’s Anonymous, Self-help groups, Weight Watchers) services for these conditions (Yager, Landsverk, & Edelstein, 1989). It was observed that the tendency to seek services increased with the severity of the eating disorders, and that significantly more women with anorexia nervosa with bulimic features sought professional treatment than did the other groups, they also sought out a larger number of treatments, and tended to use prescribed psychotropic medication more often. The investigators also noted that the women in the study, as a whole, reported a tendency to be open about their eating issues in treatment and that they participated in treatment for long periods of time e.g., several months to over a year. Moreover, for women who sought out treatment based on providers’ reputation for treating eating disorders, there was greater symptomatic change reported and well as greater perceived efficacy of treatment than for women whose treatment did not include such providers (Yager et al., 1989). It was noted that caregivers are not always selected based on their knowledge and reputation for working with eating disorders and it is unclear if the reason for this is because they are lacking in communities (Yager et al., 1989). Nevertheless, the level of improvement and perceptions of treatment efficacy were reported as modest overall, whether treatment was professional or not and there were no significant differences between those who sought treatment and those who did not over a 20 month period. The fact that this was not consistent with other reports that found higher levels of improvement and perceived effectiveness with professional treatment, led the investigators to point out that the other reports fail to document on the experiences of dropouts (Yager et al., 1989). Another reason cited for these findings was the possibility that due to heterogeneity of professional treatments, it was difficult to establish the unique contributions of the various treatments to specific eating disorder symptoms (Yager et al., 1989). Finally, the data of this study did suggest that those clients with
anorexia nervosa with bulimic features who sought non professional treatment in the form of Overeaters Anonymous and self-help groups reported no benefit and possible harm i.e., becoming “somewhat worse” (p. 635) as a result of these interventions.

In another study that examined the beliefs about treatment, prognosis and first person who might be approached in the case of seeking help for bulimia nervosa among a sample of adolescent female high school students, it was found that several females perceived their mother as the person likely to be the most helpful to them (Mond, Marks, Hay, Rodgers, Kelly, Owen et al., 2007). In addition, several females also reported that a dietitian would likely be most helpful to them. Moreover, the treatment approach reported to be the most helpful was CBT, and the majority of females believed that vitamins and minerals would be the most helpful medicines. Many youth also believed that someone with bulimia nervosa would have long-term problems and that this eating disorder is a difficult condition to manage and fully recover from. However, many also reported that full recovery would occur with appropriate treatment and that someone with bulimia nervosa will get worse if they do not receive treatment. Interestingly, when the same females were assessed based on whether they represented likely cases of clinically significant eating disorders or not, those identified as cases, were less likely to consider either parent or school counsellor as helpful as non cases. Moreover, likely cases reported less likelihood to approach their mother first in the event of an issue with eating, and they also tended to consider antidepressant medication as helpful more often than non cases.

While Mond et al. (2007) did not report on family issues, it is well-known that eating disorder issues do run in families (e.g., Steinberg & Phares, 2003). Research by Strober, Lampert, Morrell, Burroughs and Jacobs (1990), as cited in Steinberg & Phares (2003), revealed that older adolescent daughters of mothers with anorexia nervosa were 5 times more likely to develop an eating disorder than those whose mothers did not have anorexia nervosa. Furthermore, in a report that included 8 case histories examining the relationship between daughters and mothers with anorexia, where daughters were adolescents or young adult women, the authors concluded that not only does the fact that a parent has an eating disorder influence the development and maintenance of an eating disorder in their child, but it also leads to challenges in treatment (Griffiths, Beumont, Beumont, Touyz, Williams & Lowinger, 1995). For example if a mother is not coping well with her eating disorder, it is very difficult for her to provide the support and parental attention that her daughter needs for a healthy recovery. This can lead to intensification of symptoms in the child as a means of coping, whereby she adopts the behaviour that she has learned in her environment as a means of coping (Griffiths et al., 1995). Griffiths et al. (1995) also suggested that mothers and daughters with anorexia may compete with one another in treatment to be the best at demonstrating the eating disorder symptoms. It has also been observed that mothers may try to sabotage their daughter’s recovery because they find this threatening to the maintenance of their own eating disorder and may also resist making changes if challenged to adopt normalized eating behaviour as a means of supporting their children. At times, they may even become hostile as they feel pressured to change and there are cases where the parents may be reluctant to become involved in treatment because it threatens the status quo of the family (Griffiths et al., 1995). The child may also be placed in a difficult situation in treatment where they have a strong
need to protect the mother whom they know has an eating disorder herself and whom they do not want to be confronted about this, and they worry about being blamed if this issue arises in treatment (Griffiths et al., 1995). As well, it has been reported that recovery may be impeded or further complicated if there is rigid paternal preoccupation with fitness and exercise. Indeed, where there is a rigid family focus on dieting, eating, weight, shape and exercise, this may prevent the youth with an eating disorder from becoming an independent, autonomous individual and tends to reinforce the maintenance of eating disorder pathology (Griffiths et al., 1995).

Many studies also support the presence of a family link to the development of body image concerns. For example, both male and female adolescents have reported that family members were the primary source of information they received about weight control and appearance issues (Desmond, Price, Gray, & O’Connell, 1986, as cited in Steinberg & Phares, 2003). It has also been shown that even very young children (i.e., 5 years) are influenced by their parents’ attitudes toward eating and weight (e.g., Abramovitz & Birch 2000, as cited in Steinberg & Phares, 2003). Moreover, it was found that mothers who tended to be dieting were more likely to have daughters who had strong ideas about dieting as well (Abramovitz & Birch 2000, as cited in Steinberg & Phares, 2003). Another study suggested that mothers’ beliefs about weight, dieting, and exercise may be internalized by their daughters (Moreno & Thelen, 1993, as cited in Steinberg & Phares, 2003), and still others have documented that maternal body image predicted eating problems among adolescent girls (Attie & Brooks-Gunn, 1989, as cited in Steinberg & Phares, 2003). Leung et al. (1996), as cited in Steinberg & Phares (2003) demonstrated that family preoccupation with eating and body shape had a direct effect on female teens’ eating behaviour and degree of body dissatisfaction. Therefore, the influence of parental attitudes and beliefs about weight, eating and body shape on the development of body image and eating problems is well-documented.

Clear connections between family dysfunction and eating problems have been well documented (Steinberg & Phares, 2003). These connections are noted to be more consistent in relation to bulimia nervosa and binge eating issues and less consistently reported in relation to restrictive anorexia nervosa (Steinberg & Phares, 2003). One study indicated that clients who were binge-eating reported less family cohesion than clients with anorexia nervosa, less family expressiveness than clients with bulimia and being less active as a family in terms of recreation than those with anorexia or bulimia (Hodges, Cochrane, & Brewerton, 1998, as cited in Steinberg & Phares, 2003). In another community sample study, family dysfunction seemed to be linked with negative self-esteem, eating and psychological difficulties (Leung, Schwartzman & Steiger, 1996, as cited in Steinberg & Phares, 2003). In a randomized control trial where drop out and remission were studied in relation to family therapy with adolescents with anorexia nervosa (Lock et al., 2006), it was observed that lower levels of family cohesion (i.e., lower levels of enmeshment) and expressiveness (i.e., lower levels of criticism) predict remission. In a separate study, McGrain and Car (2002) reported that young women (17 to 21 years) at risk for eating disorders indicated that in their families there were greater difficulties with problem solving, roles, affective responsiveness and general functioning in comparison to a control group of youth. As well, the “at risk” group perceived their
parents to have more psychological problems than the control group. For example, in reference to their mothers, there was greater somatization, interpersonal sensitivity, depression, anxiety, anger, hostility and paranoid ideation reported. In reference to their fathers, the youth perceived them to have significant problems with depression, anger and hostility (McGrain & Car, 2002).

Despite studies that report help-seeking behaviour, it is well known that individuals with eating disorders are often reluctant to seek treatment and that they often cease contact with treatment services prematurely. A number of factors have been proposed to explain low rates of treatment-seeking for eating disorders. These include illness-related factors such as shame and secrecy (Vitousek, Daly, & Heiser, 1991, as cited in Mond et al., 2007), treatment factors such as lack of availability of services and cost of specialist treatment (Banasiak et al, as cited in Mond et al., 2007), as well as beliefs held by youth about eating disorders that include ambivalence about anti-depressant medication, being unsure about the benefits of seeking out mental health specialists and lack of recognition of an eating problem (Mond et al., 2007). Studies from many eating disorders services further indicate that the drop out rate for virtually all types of treatment is considerable and suggest that clients are often dissatisfied for various reasons with the treatment received (Yager et al., 1989). Individuals with eating disorders have also been reported to frequently drop out of clinical trial studies for such reasons as denial, being fearful of weight gain in the case of anorexia nervosa, and hesitancy to take medication (AHRQ, 2006). Moreover, a high drop out rate has been reported for clients attending groups for anorexia nervosa (Hall, 1985, as cited in Riebel, 1990). Due to the clinical complexity of clients with eating disorders (e.g., denial, focus on somatic issues, low motivation to change, boundary problems, social ineffectiveness, poor communication skills and comorbid conditions), clients often find treatment, group as well as individual, quite challenging (Riebel, 1989; 1990). Lock et al. (2006) have also reported that the presence of comorbid symptoms such as depression, anxiety, and obsessiveness tend to lead to lower remission rates and also increase the probability of dropout among youth with anorexia nervosa. Length of stay in treatment for clients with anorexia nervosa may be as much a result of person factors as of treatment protocol, treatment setting or clinical features (Maguire, Surgenor, Abraham & Beumont, 2003). Therefore, not only are there challenges in terms of accessibility to treatment services and desire or willingness to engage in treatment, but it also appears that clients find it extremely difficult to remain in treatment.

It is, however, notable that drop out rates appear to be an issue in psychiatric populations at large and are not unique to eating disorders. For example, in cases where individuals seek out mental health services for urgent help or to address specific issues, drop out rates tend to range between 30% and 50% (Chiesa, Drahorad, & Longo, 2000; Garfield, 1994, both cited in Marini et al., 2005), and it has been reported that up to 50% of clients have dropped out of treatment before the eighth session (Garfield, 1994, as cited in Marini et al., 2005). Moreover, Marini et al. (2005) found that of the sample of individuals studied who attended a department of psychiatry for the delivery of emotional crisis intervention (first-aid brief intervention), students and housewives had a higher risk of dropout while those unemployed had the lowest. As well, dropouts tended to be younger in this study,
they reported dropout rates of about 20%, and the average point of dropout was at session 6 with a range of 5 to 9 sessions. Marini et al. (2005) also reported that borderline personality disorder was found to be a predictor of dropout for their sample which was consistent with the findings of other studies (e.g., Chiesa et al., 2000, as cited in Marini et al., 2005). This of course suggests that higher drop out rates are associated with greater psychiatric comorbidity and greater complexity of psychiatric presentation, as in the case of eating disorders.

While race and ethnicity are not commonly studied in relation to eating disorders, the literature presents some evidence that family race-ethnicity, in addition to family cultural orientation may be linked to body image and eating disorder concerns (Crago, Shisslak, & Estes, 1996, as cited in Steinberg & Phares, 2003). For example, in samples of families of Hispanic/Latina American, African American, Asian American, Native American (Crago et al., 1996, as cited in Steinberg & Phares, 2003) and British Asian (Hill & Bhatti, 1995, as cited in Steinberg & Phares, 2003) backgrounds, those with greater cultural orientation toward White, middle-class values were found to have children and adolescents at greater risk for eating problems. Among Caucasian American youth it is more often the case that lower family connectedness has been linked with binge-eating than is the case for other racial and ethnic groups (French, Story, Neumark-Sztainer, Downes, Resnick, & Blum, 1997 as cited in Steinberg & Phares, 2003). Another example reported was that a relationship between lower levels of family adaptability and more eating-related issues was more common among Greek-Australian youth than Anglo-Australian youth (Mildred, Paxton, & Wertheim, 1995 as cited in Steinberg & Phares, 2003).

**Summary of Limitations of Outcome Studies**

With outcome studies, it is important to note that the lack of consistency of measures makes it difficult to make meaningful comparison across studies (AHRQ, 2006). This is particularly problematic in relation to standardizing measures of weight and weight change in outcome evaluations and trials involving anorexia nervosa treatment, especially when age and sex corrections for BMI need to be used. Efforts to consolidate and standardize the number of measures in evaluation would be helpful. In addition, with respect to eating disorders research, it would be beneficial to apply standardized definitions of such variables as stages of illness, remission, recovery and relapse (AHRQ, 2006).

A significant limitation of outcome research with anorexia nervosa is the failure to report race and ethnicity of participants (AHRQ, 2006). While research with bulimia nervosa and BED does make some reference to ethnicity and race, no studies of medication or behavioural interventions have been reported to assess whether treatment efficacy differs by race or ethnic background (AHRQ, 2006). In addition, it will also be important to determine the extent to which socio-cultural factors such as stigma may relate to the underrepresentation and identification of racial and ethnic minorities in studies (AHRQ, 2006).
Moreover, a lot of the literature does not report on physical and psychological harm that may be associated with interventions. Given that medication and behavioural interventions may have adverse effects, and given the often reported high drop out rates with clinical trials, it will be important to assess for these effects (AHRQ, 2006). It has even been suggested, for example, that with anorexia nervosa, adverse events might differ between those who are underweight and those who are weight restored in relation to treatment. Thus specificity of harm or risk with subgroups needs to be delineated (AHRQ, 2006).

Another important gap in outcome research is the lack of replication studies to confirm effectiveness (AHRQ, 2006). As already noted, comparison across trials is often difficult due to variability among studies. There is also the need for large multisite randomized controlled trials. Multisite trials have the benefits of facilitating client recruitment, enhancing statistical power, enabling meaningful subgroup analyses, buffering against high drop out rates and improving the generalizability of results (AHRQ, 2006). Multisite initiatives may also be helpful as a means of pooling databases that provide a mechanism for networks of clinicians to study patients, treatments and outcomes in typical clinical settings (Maguire et al., 2003). According to Maguire et al. (2003), this will facilitate the transfer of research findings into clinical practice, it will help to minimize significant findings due to site idiosyncrasies, and will offer a means of comparability across like or similar practice settings. Finally, these authors have stressed that, once established, the costs of ongoing data collection and collaboration with other treatment centers is low.

Methodology

Participants

While the program has been collecting data on clients on an ongoing basis, given the number of clients who consented to allow their data to be reported, and given incomplete data and missing information, descriptive data are available on 85 participants. The following demographic information identifies the characteristics of the 85 clients. These clients were seen in the program between 2003 and the present. There were 81 females (95.3%) and 4 males (4.7%) who made up the clients. Ages of clients ranged between 9 and 19 years of age with the average age being 15 years (SD=2). Median and mode ages were also 15 years, indicating that the majority of clients were in the mid teens. The majority of clients N=79 (92.9%) were Caucasian. There were 3 clients (3.5%) who were Black, one (1.2%) who was Latin American, one (1.2%) who was East Indian and one (1.2%) who was Asian.

Most clients participated in the multidisciplinary assessment that included a psychosocial family assessment with their families. Families were variously constructed with 60% (N=51) described as nuclear, 17.6 % (N=15) as single-parent families, 15.3% (N=13) as reconstituted families, and 1.2% (N=1) as adoptive families. A further, 3.5% of cases
(N=3) were described as youth in the care of the Children’s Aid Society and in 1.2% (N=1) of cases the youth was living away from home at a friend’s family. There was no available data for 1.2% (N=1) of the clients who did not elect to participate beyond completion of the psychometric measures.

In terms of eating disorder diagnostic categories, 20 clients (23.5%) were diagnosed with Anorexia Nervosa, Restrictive Type, 11 clients (12.9%) were diagnosed with Anorexia Nervosa, Binge-Purge Type, 18 clients (21.2%) received the diagnosis of Bulimia Nervosa, 2 clients (2.4%) were diagnosed with BED, and 28 clients (32.9%) were diagnosed with EDNOS. Three clients (3.5%) did not meet the criteria for an eating disorder and assessments to allow for identification of a diagnosis were incomplete for 3 clients (3.5%).

In terms of attendance in the program, it is notable that 19 clients (22.3%) attended three sessions or less and most of these sessions were attended only by the youth (no family involvement) and represent completion of the psychological assessment. Sixty-four clients (75.3%) attended more than 3 sessions with the program. These sessions may have included family and group therapy as well as individual assessment and treatment. The range of sessions attended was 4 to 80 with most frequently reported number of sessions (mode) being 8 sessions. The average number of sessions was 14.5 (SD=12.8). The median number of sessions was 10 which indicated that 50% of youth attended 10 or more sessions. Two clients (2.3%) were diagnosed as not having an eating disorder after the comprehensive assessment. One of these was not seen beyond assessment. The other client was seen for a brief number of sessions to provide some psychoeducation towards the prevention of development of an eating disorder given her previous history of restrictive eating behaviour.

Procedure

In terms of program evaluation, clients, at their initial assessment appointment with the team psychologist, are given information about the program evaluation being carried out and are asked to sign a program evaluation form (Appendix A) to consent to their data being tracked on the database. They are made aware that their consent is optional and in no way affects their treatment in the program. Psychometric packages are administered to clients at admission and at various points during treatment, often after a group intervention, but if they do not attend group, effort is made to reassess their functioning after a period of time of involvement in individual and or family therapy as well as nutrition counselling. There was no standard amount of time set for reassessment given the variable schedules of attendance to the program by adolescent clients and the fact that it was often challenging to schedule reassessment sessions. Efforts were made to try to reassess at least 6 months after entry into the program.

Once questionnaires are administered, they are scored and subsequently the information is transferred to a database. The database includes demographics (e.g., age, race, family construction), some clinical information and clinical outcome measures. Clinical
information includes information gathered during the multidisciplinary assessment sessions including eating disorder diagnosis at baseline, data about BMI, concurrent treatment, previous treatment experiences, and family body image issues, family exercise concerns and family food issues. “Family body image issues” refers to any concerns or dissatisfaction with body size and shape noted in the family. “Family exercise concerns” reflects whether family members are likely to be engaging in and preoccupied with excessive exercise and promoting this. “Family food issues” makes reference to dieting or restrictive eating behaviours among family members, the encouragement of dieting, the presence of or perception of food as falling into good or bad foods, and/or the lack of family meal times or regular meal times. The clinical outcome measures are listed below. Adolescent and adult data are tracked separately. While every effort has been made to try to keep the database up to date, this has been a great challenge for the program due to limited staff resources and lack of funds to perform this role. The request for the grant was to access funds that would enable the program to hire personnel to update the database and to carry out statistical analyses on outcome measures collected on youth.

Funds awarded were used to hire staff for the project whose role was to update the database and carry out statistical analyses on outcome measures collected on youth in the program. This activity was supervised by Dr. Xinaris, Psychologist and Clinical Leader of the program. Funds were also used to purchase additional testing materials that comprise the psychometric package, and the Statistical Package for the Social Sciences (SPSS) software to run analyses.

It should be noted that Research Ethics Board (REB) approval was sought and received from Lakeridge Health for this project and for ongoing program evaluation activity. This approval is renewed annually.

Measures

The psychometric package administered to all clients at initial assessment and at follow-up assessments where completed included The Children’s Depression Inventory (CDI; Kovacs, 1992), The Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965), and The Eating Disorder Inventory-2 (EDI-2; Garner, 1991).

The CDI (Kovacs, 1992) was developed to meet the need for a self-rated depressive symptom inventory for children and youth. It is a 27-item symptom scale for school-aged children and adolescents 7 to 17 years. It is a measure that is sensitive to changes in depression over time and is a suitable index of severity of depressive disorder. It has items that help quantify a range of depressive symptoms such as disturbed mood, ability to participate in and get pleasure out of activities, vegetative functions, self-evaluation and interpersonal functioning (Kovacs, 1992). The CDI provides total score and factor or subscale scores which can be plotted to get a profile. There are 5 subscales: Negative Mood, Interpersonal Problems, Ineffectiveness, Anhedonia, and Negative Self-Esteem. Profiling can be done at different periods of intervention if desired to see how child is functioning. This measure has good reliability, both internal consistency and test-retest
reliability (e.g., Finch, Saylor, Edwards, & McIntosh, 1987, as cited in Kovacs, 1992; Kovacs, 1992). In addition, it has demonstrated construct validity, concurrent validity, discriminant validity, predictive validity and criterion validity (e.g., Green, 1980, Hodges, 1990 both cited in Kovacs, 1992; Kovacs, 1992).

The RSE (Rosenberg, 1965) represents an effort to develop a unidimensional measure of global self-esteem. It was designed to be a Guttman scale, which means that the RSE items were to represent a continuum of self-worth statements ranging from statements that are endorsed even by individuals with low self-esteem to statements that are endorsed only by persons with high self-esteem. It consists of 10 statements related to overall feelings of self-worth or self-acceptance. The items are answered on a four-point scale, ranging from strongly agree to strongly disagree and are scored as a six-item Guttman scale. Rosenberg (1965) showed that his scale was a Guttman scale by obtaining high enough reproducibility or test-retest reliability and scalability or internal consistency coefficients. High reliability has been noted by others as well (e.g., Silber & Tippet, 1965; Blaschovich & Tomaka 1993, as cited on The Department of Sociology, University of Maryland internet site [http://www.bsos.umd.edu/socy/Research/rosenberg.htm]). In addition, studies have demonstrated a unidimensional and two-factor structure to the scale (Rosenberg, 1979; University of Maryland internet site). Face validity, construct validity, convergent validity, and discriminant validity have been demonstrated as well (e.g., Demo, 1985; Silber & Tippet, 1965).

The EDI-2 (Garner, 1991) is a widely used and accepted standardized self-report measure that provides a comprehensive assessment of the behavioural and psychological dimensions of eating disorders. It was a revision of the EDI which was the original version of this measure. It generates a psychological profile that can be used to direct treatment goals. It has a number of subscales: Body Dissatisfaction, Drive for Thinness, Bulimia, Ineffectiveness, Interpersonal Distrust, Perfectionism, Interoceptive Awareness and Maturity Fears. It also has 3 subscales that were not included in the EDI that are considered supplementary and exploratory and were not used for the purpose of assessment in our program. The EDI-2 is reported to have good internal consistency (Garner, 1991) test-retest reliability (Crowther, Lilly, Crawford, & Shepherd as cited in Crowther & Sherwood, 1997) and validity (Garner 1991). The EDI-2 is also a tool that is sensitive to changes as a result of psychological treatment (e.g., Wooley & Kearney-Cooke, 1986, as cited in Crowther & Sherwood, 1997) and is, therefore, a good instrument for assessing change over time. It should be noted that the EDI-3 (Garner, 2004) which is the newest version of the EDI, has replaced administration of the EDI-2 since its publication and availability as an instrument. However, given that outcome data was collected prior to the administration of the EDI-3 and in order to have comparability of EDI subscales, it was decided to use the EDI-2 version for the purposes of this project.

Administration of the psychometric package formed part of the psychodiagnostic assessment carried out by the team psychologist. In addition to completion of the measures, the psychodiagnostic assessment included a structured clinical interview with each client. An adaptation of the Diagnostic Survey for Eating Disorders (DSED;
Johnson, 1985) was used. The DSED is a widely used structured interview diagnostic tool that is standardized and facilitates the collection of comprehensive information about individual functioning including information about eating and purging behaviour. Moreover, it allows for collection of information about frequency of behaviour.

**Data Analyses**

The data were subjected to descriptive statistics and statistical analyses for significance. As well, data were submitted to logistic regression analysis to evaluate predictability of clinical outcome measures and specific clinical information gathered. Given the fact that there were only 4 males and 81 females for which data were available, it was not possible to run statistical analyses that compared gender differences. The sample size of males was too small for this and posed a problem for the power of statistical tests (Stevens, 1986).

Descriptive statistics include frequency data that help to provide a profile of the clients seen in the program on a number of categorical variables. In addition, Chi-square analyses were performed by age group (younger than 14 and 15 and older) to examine differences on a number of variables: eating disorder diagnosis at admission, concurrent treatment involvement, involvement in intensive services, family food issues, family body image issues, family exercise issues, and family involvement with treatment. As well, Chi-square analyses by BMI groupings were carried out to explore differences by weight status in terms of receiving intensive services, involvement in concurrent treatment, family food issues, family exercise issues, family body image issues, and family involvement in treatment. The three BMI groups created were BMI < 17.5 which is classified as clinically underweight and is representative of clients with anorexia nervosa (APA, 1994), BMI 18 – 26.5 to represent a mid weight range, and BMI > 27 to represent overweight status. It is important to note that the categorization of a continuous variable such as BMI into distinct groups has been noted to be arbitrary, particularly in relation to average, overweight, and obese categories (Campos, 2004; Gaesser, 2002). We have selected these groups, defined by these ranges, as a means of providing information about youth at different weights, while recognizing that we have chosen to be more liberal than other investigators in relation to the average range of weight, and that we have not further distinguished between overweight and obese categories for our purposes.

An analysis of variance (ANOVA) was run to examine length of stay in days and weeks in the program by age group as defined above. An ANOVA was also carried out to evaluate differences on clinical outcome measures, baseline BMI and baseline ideal weight at the initial assessment by age group. The clinical outcome measures included the RSE, the 8 EDI-2 subscales, and the CDI total score and subscales. The BMI groups were also subjected to an ANOVA to assess differences in age at admission, length of stay, baseline ideal weight, and the clinical outcome measures.

A repeated measures ANOVA was conducted to examine differences between pre and post treatment scores on the clinical outcome measures. These analyses could only be run
on 12 adolescents for whom data could be collected after a period of treatment and who gave consent for their data to be reported.

Logistic regression analysis was used to explore if any of the family variables assessed can predict the diagnosis of EDNOS at baseline among client participants. The category of EDNOS included BED for the purpose of this analysis. BED is considered a form of EDNOS according to the DSM-IV. EDNOS was selected because it is often an unexplored and under assessed category, even though the majority of persons diagnosed with eating disorders have been reported to receive this diagnosis (AHRQ, 2006). Moreover, EDNOS was selected because a significant number of youth in our sample (N=30, 35.3%) received this diagnosis. The family variables that served as predictors included whether or not there were family food issues, family exercise issues, family body image issues, and whether there was family involvement with treatment. A second regression analysis was carried out to explore if the diagnosis of EDNOS at baseline can be predicted by age and any of the clinical outcome measures.

Results

Descriptive Data

In terms of whether clients were receiving any concurrent treatment at the time of their involvement in the program, 54 clients (63.5%) reported having no concurrent treatment aside from being monitored by their family physician. Six clients (7.1%) reported seeing a counsellor, 5 clients (5.9%) reported seeing a psychologist, one client (1.2%) reported seeing a social worker and 15 clients (17.6%) reported being seen by a psychiatrist. There were 4 clients (4.7%) for whom this information was not obtained.

Clients were also asked to provide information about their involvement in more intensive treatment services for eating disorders. Sixty-nine clients (81.2%) reported no involvement in intensive services, 7 clients (8.2%) reported receiving treatment at the Hospital for Sick Children, 3 clients (3.5%) reported receiving treatment from North York General Hospital, and one client (1.2%) indicated that they were treated at the Toronto General Hospital, all of which offer intensive treatment services for eating disorders. In addition, one client (1.2%) was treated at Lakeridge Health Oshawa where they received medical stabilization as it is not an intensive eating disorders program. There were 4 clients (4.7%) for whom this information was not obtained.

During the family assessment session, information was also gathered about body image issues, exercise concerns and food issues that might be present in the family. As previously noted, body image issues refers to any concerns or dissatisfaction with body size and shape that may be present in other family members besides the client. Twenty-two clients (25.9%) had families where body image issues were reported. No body image issues were reported for family members of 37 clients (43.5%). For family members of 26 clients (30.6%), there was no information obtained. Exercise concerns reflect whether family members are likely to be engaging in and preoccupied with excessive exercise and
promoting this. There were no exercise issues reported for family members of 52 clients (61.2%). For family members of 7 clients (8.2%), exercise concerns were present. There was no information obtained on exercise for family members of 26 clients (30.6%). Food issues include such things as the presence of restrictive eating behaviours among family members, the encouragement of dieting, and/or the presence of or the perception of food as falling into good or bad foods, and/or the lack of family meal times or regular meal times. For family members of 34 clients (40%), there were no food issues reported. For family members of 25 clients (29.4%) there were food issues reported. There was no information obtained for family members of 26 clients (30.6%).

In terms of number of clients who participated in family therapy which included at least one family treatment session following a family psychosocial assessment session, 13 clients (15.3%) attended family therapy sessions. Seventy-two clients (84.7%) did not participate in family therapy sessions.

### Differences on Categorical Variables by Age and BMI

Chi square analyses run by age group (younger than 14 and 15 years and older) to examine differences with respect to eating disorder diagnosis at admission, concurrent treatment involvement, involvement in intensive services, family food issues, family body image issues, family exercise issues, and family involvement with treatment did not reveal any significant age differences. Chi square analyses carried out to explore differences by weight status (BMI groups as previously defined) in relation to receiving intensive services, involvement in concurrent treatment, family food issues, family exercise issues, family body image issues, and family involvement in treatment, also did not reveal significant results. This indicates that the above mentioned variables did not differ among the BMI groups as defined.

### Differences on Clinical Outcome Measures by Age Group

Table 1 presents the means and standard deviations of clinical outcome measures by age groups along with F values that represent the findings of the ANOVA that was carried out. Significant findings were reported for the RSE scale $F(1, 81) = 4.18$, $p = 0.044$ such that the younger adolescents (14 or under) reported higher self-esteem than the adolescents who were 15 years and older. Significant differences were also reported for baseline ideal weight $F(1, 74) = 16.78$, $p < 0.0005$ such that the ideal weight for the younger adolescents was lower than for the older adolescents. The CDI Anhedonia subscale was also significant at $F(1, 71) = 4.56$, $p = 0.036$ indicating that the younger adolescents reported lower scores meaning that they were not as likely to stop engaging in previously enjoyed activities as the older adolescents. No other significant differences were found suggesting that both age groups were similar in terms of baseline BMI, the EDI-2 subscales, the other CDI subscales and total CDI scores.
Table 1. Mean Scores and Standard Deviations of Clinical Outcome Measures By Age Group.

<table>
<thead>
<tr>
<th>Variable</th>
<th>14 Years and Under</th>
<th>15 Years and Older</th>
<th>F</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (N=26)</td>
<td>Mean (N=54)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EDI-2 Drive for Thinness</td>
<td>11.46(11.46)</td>
<td>13.87(13.87)</td>
<td>1.93</td>
<td>1, 78</td>
<td>.169</td>
</tr>
<tr>
<td>EDI-2 Bulimia</td>
<td>3.00(3.00)</td>
<td>5.11(5.11)</td>
<td>3.16</td>
<td>1, 78</td>
<td>.079</td>
</tr>
<tr>
<td>EDI-2 Body Dissatisfaction</td>
<td>15.04(15.04)</td>
<td>15.09(15.09)</td>
<td>0.00</td>
<td>1, 78</td>
<td>.981</td>
</tr>
<tr>
<td>EDI-2 Ineffectiveness</td>
<td>9.54(9.54)</td>
<td>9.77(9.77)</td>
<td>0.01</td>
<td>1, 77</td>
<td>.905</td>
</tr>
<tr>
<td>EDI-2 Perfectionism</td>
<td>7.62(7.62)</td>
<td>6.42(6.42)</td>
<td>1.18</td>
<td>1, 77</td>
<td>.281</td>
</tr>
<tr>
<td>EDI-2 Interpersonal Distrust</td>
<td>4.65(4.65)</td>
<td>5.65(5.65)</td>
<td>0.85</td>
<td>1, 78</td>
<td>.359</td>
</tr>
<tr>
<td>EDI-2 Interoceptive Awareness</td>
<td>8.69(8.69)</td>
<td>9.70(9.70)</td>
<td>0.36</td>
<td>1, 77</td>
<td>.550</td>
</tr>
<tr>
<td>EDI-2 Maturity Fears</td>
<td>5.42(5.42)</td>
<td>6.00(6.00)</td>
<td>0.29</td>
<td>1, 78</td>
<td>.591</td>
</tr>
<tr>
<td>RSE Scale</td>
<td>2.96(2.96)</td>
<td>3.89(3.89)</td>
<td>4.19</td>
<td>1, 81</td>
<td>.044*</td>
</tr>
<tr>
<td>Baseline BMI</td>
<td>21.18(21.18)</td>
<td>21.57(21.57)</td>
<td>0.07</td>
<td>1, 80</td>
<td>.790</td>
</tr>
<tr>
<td>Baseline Ideal Weight</td>
<td>117.26(117.26)</td>
<td>132.47(132.47)</td>
<td>10.93</td>
<td>1, 74</td>
<td>.000**</td>
</tr>
<tr>
<td>Total CDI Score</td>
<td>15.25(15.25)</td>
<td>18.60(18.60)</td>
<td>1.74</td>
<td>1, 71</td>
<td>.192</td>
</tr>
<tr>
<td>CDI-Negative Mood</td>
<td>4.21(4.21)</td>
<td>4.82(4.82)</td>
<td>0.81</td>
<td>1, 71</td>
<td>.370</td>
</tr>
<tr>
<td>CDI-Interpersonal Problems</td>
<td>1.11(1.11)</td>
<td>1.36(1.36)</td>
<td>0.76</td>
<td>1, 71</td>
<td>.385</td>
</tr>
<tr>
<td>CDI-Ineffectiveness</td>
<td>2.14(2.14)</td>
<td>2.64(2.64)</td>
<td>0.80</td>
<td>1, 71</td>
<td>.374</td>
</tr>
<tr>
<td>CDI-Anhedonia</td>
<td>4.57(4.57)</td>
<td>6.36(6.36)</td>
<td>4.56</td>
<td>1, 71</td>
<td>.036</td>
</tr>
<tr>
<td>CDI-Negative Self-Esteem</td>
<td>3.18(3.18)</td>
<td>3.44(3.44)</td>
<td>0.19</td>
<td>1, 71</td>
<td>.669</td>
</tr>
</tbody>
</table>

*p≤.05 **p≤.01- all two-tailed
Differences on Clinical Outcome Measures by BMI

Table 2 presents the means and standard deviations of clinical outcome measures by BMI groups along with F values that represent the findings of the ANOVA that assessed differences based on weight status. Significant findings were reported for the RSE scale $F(2, 79) = 4.2, p = 0.018$, EDI-2 Drive for Thinness subscale $F(2, 77) = 5.37, p = 0.007$, EDI-2 Body Dissatisfaction subscale $F(2, 77) = 9.01, p < 0.0005$, EDI-2 Ineffectiveness subscale $F(2, 76) = 5.40, p = 0.006$, CDI total score $F(2, 69) = 5.08, p = 0.009$, CDI Negative Mood subscale $F(2,69) = 4.40, p = 0.016$, CDI Ineffectiveness subscale $F(2,69) = 4.90, p = 0.010$, CDI Anhedonia subscale $F(2,69) = 3.43, p = 0.038$, and CDI Negative Self-Esteem subscale $F(2, 69) = 5.47, p = 0.006$. There were no significant findings for the remaining variables indicating that there were no differences among the BMI groups in terms of age at admission, length of stay, EDI-2 Bulimia subscale, EDI-2 Perfectionism subscale, EDI-2 Interpersonal Distrust subscale, EDI-2 Interoceptive Awareness subscale, EDI-2 Maturity Fears subscale, baseline ideal weight and CDI Interpersonal Problems subscale.

Post hoc analyses revealed the following significant between group differences. It was found that youth with a BMI < 17.5 as a group, had significantly lower RSE scores than those with a BMI 18- 26.5 ($p= .015$). Similarly, youth with a BMI < 17.5, had a significantly lower drive for thinness score than those with a BMI 18- 26.5 ($p=.005$). As well, those with a BMI < 17.5 reported significantly lower body dissatisfaction scores than both those with a BMI 18- 26.5 and those with a BMI > 27 ($p=.001$ for both). Youth with a BMI < 17.5, also reported significantly lower ineffectiveness scores than those in the BMI 18- 26.5 group ($p=.005$). In addition, the group with BMI < 17.5 reported significantly lower total CDI scores than those with a BMI 18-26.5 ($p=.007$), as well as lower scores on the negative mood subscale ($p=.028$), the ineffectiveness subscale ($p=.013$), the negative self-esteem subscale ($p=.006$), and the anhedonia subscale of the CDI ($p=.037$) in comparison to the clients with a BMI 18-26.5. No other comparisons were significant.
Table 2. Mean Scores and Standard Deviations of Clinical Outcome Measures by BMI Group.

<table>
<thead>
<tr>
<th>Variable</th>
<th>BMI &lt; 17.5</th>
<th>BMI 18-26.5</th>
<th>BMI &gt; 27</th>
<th>F</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at Admission (Weeks)</td>
<td>14.7</td>
<td>15.7</td>
<td>14.3</td>
<td>2.87</td>
<td>2.79</td>
<td>.062</td>
</tr>
<tr>
<td>RSE Scale</td>
<td>7.15</td>
<td>6.86</td>
<td>6.88</td>
<td>5.37</td>
<td>2.77</td>
<td>.007**</td>
</tr>
<tr>
<td>EDI-2 Drive for Thinness</td>
<td>2.75</td>
<td>5.04</td>
<td>5.56</td>
<td>2.72</td>
<td>2.77</td>
<td>.072</td>
</tr>
<tr>
<td>EDI-2 Bulimia</td>
<td>7.56</td>
<td>11.4</td>
<td>6.00</td>
<td>3.08</td>
<td>2.77</td>
<td>.682</td>
</tr>
<tr>
<td>EDI-2 Body Dissatisfaction</td>
<td>4.56</td>
<td>11.4</td>
<td>6.42</td>
<td>5.39</td>
<td>2.76</td>
<td>.006**</td>
</tr>
<tr>
<td>EDI-2 Ineffectiveness</td>
<td>6.89</td>
<td>4.63</td>
<td>5.63</td>
<td>0.28</td>
<td>2.76</td>
<td>.750</td>
</tr>
<tr>
<td>EDI-2 Perfectionism</td>
<td>4.56</td>
<td>5.81</td>
<td>5.47</td>
<td>6.00</td>
<td>3.08</td>
<td>.38</td>
</tr>
<tr>
<td>EDI-2 Interpersonal Distrust</td>
<td>7.11</td>
<td>10.3</td>
<td>7.02</td>
<td>1.69</td>
<td>2.76</td>
<td>.190</td>
</tr>
<tr>
<td>EDI-2 Maturity Fears</td>
<td>4.89</td>
<td>5.96</td>
<td>6.45</td>
<td>3.73</td>
<td>2.77</td>
<td>.540</td>
</tr>
<tr>
<td>Baseline Ideal Weight</td>
<td>122.6</td>
<td>128.1</td>
<td>130.5</td>
<td>.851</td>
<td>2.73</td>
<td>.431</td>
</tr>
<tr>
<td>Total CDI Score</td>
<td>10.76</td>
<td>19.89</td>
<td>16.44</td>
<td>5.08</td>
<td>2.69</td>
<td>.009**</td>
</tr>
<tr>
<td>CDI-Negative Mood</td>
<td>3.29</td>
<td>5.33</td>
<td>3.56</td>
<td>4.40</td>
<td>2.69</td>
<td>.016*</td>
</tr>
<tr>
<td>CDI-Interpersonal Problems</td>
<td>0.88</td>
<td>1.05</td>
<td>1.11</td>
<td>0.92</td>
<td>1.33</td>
<td>.271</td>
</tr>
<tr>
<td>CDI-Ineffectiveness</td>
<td>1.24</td>
<td>3.09</td>
<td>1.78</td>
<td>4.89</td>
<td>2.69</td>
<td>.010**</td>
</tr>
<tr>
<td>CDI-Anhedonia</td>
<td>3.71</td>
<td>6.20</td>
<td>6.11</td>
<td>3.42</td>
<td>2.69</td>
<td>.038*</td>
</tr>
<tr>
<td>CDI-Negative Self Esteem</td>
<td>1.65</td>
<td>3.87</td>
<td>3.89</td>
<td>5.46</td>
<td>2.69</td>
<td>.006**</td>
</tr>
</tbody>
</table>

*p ≤ .05 **p ≤ .01 ***p ≤ .001 all two-tailed
Differences over Time on Clinical Outcome Measures

Table 3 presents the means and standard deviations of the outcome measures along with F values that represent the findings of the repeated measures ANOVA that assessed differences between pre and post assessment times. These analyses could only be run on 12 adolescents for whom data could be collected after a period of treatment and who gave consent for their data to be reported. Most of the 12 adolescents attended a psychoeducation group as well as receiving individual and/or family therapy and/or nutrition education and counselling. The time between pre and post assessment varied for these adolescents as well. The one variable that emerged as significant was the CDI Negative Mood subscale such that the scores of adolescents showed a reduction in negative mood over time.

Table 3. Mean Scores and Standard Deviations of Clinical Outcome Measures at Admission (Pre) and After a Period of Treatment (Post) in the Program.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Admission (N=12)</th>
<th>After Period of Treatment (N=12)</th>
<th>F</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDI-2 Drive for Thinness</td>
<td>13.50 7.34</td>
<td>9.83 7.81</td>
<td>4.06</td>
<td>1,11</td>
<td>.069</td>
</tr>
<tr>
<td>EDI-2 Bulimia</td>
<td>3.58 5.07</td>
<td>3.83 4.99</td>
<td>0.04</td>
<td>1,11</td>
<td>.854</td>
</tr>
<tr>
<td>EDI-2 Body Dissatisfaction</td>
<td>14.83 7.31</td>
<td>12.83 8.23</td>
<td>0.68</td>
<td>1,11</td>
<td>.428</td>
</tr>
<tr>
<td>EDI-2 Ineffectiveness</td>
<td>8.00 7.21</td>
<td>8.82 7.59</td>
<td>0.17</td>
<td>1,10</td>
<td>.691</td>
</tr>
<tr>
<td>EDI-2 Perfectionism</td>
<td>7.17 4.17</td>
<td>6.42 4.72</td>
<td>0.32</td>
<td>1,11</td>
<td>.582</td>
</tr>
<tr>
<td>EDI-2 Interpersonal Distrust</td>
<td>3.75 2.70</td>
<td>6.00 5.77</td>
<td>3.92</td>
<td>1,11</td>
<td>.073</td>
</tr>
<tr>
<td>EDI-2 Interoceptive Awareness</td>
<td>9.67 6.44</td>
<td>8.17 8.52</td>
<td>0.73</td>
<td>1,11</td>
<td>.412</td>
</tr>
<tr>
<td>EDI-2 Maturity Fears</td>
<td>7.67 5.93</td>
<td>5.00 4.90</td>
<td>1.54</td>
<td>1,11</td>
<td>.240</td>
</tr>
<tr>
<td>RSE Scale</td>
<td>3.67 1.72</td>
<td>3.25 2.01</td>
<td>0.36</td>
<td>1,11</td>
<td>.558</td>
</tr>
<tr>
<td>Total CDI Score</td>
<td>16.09 8.09</td>
<td>12.91 9.02</td>
<td>2.01</td>
<td>1,10</td>
<td>.187</td>
</tr>
<tr>
<td>CDI-Negative Mood</td>
<td>4.91 2.81</td>
<td>3.18 2.52</td>
<td>7.43</td>
<td>1,10</td>
<td>.021*</td>
</tr>
<tr>
<td>CDI- Interpersonal Problems</td>
<td>1.18 1.08</td>
<td>1.00 1.27</td>
<td>0.19</td>
<td>1,10</td>
<td>.676</td>
</tr>
<tr>
<td>CDI-Ineffectiveness</td>
<td>2.09 2.02</td>
<td>2.18 2.23</td>
<td>0.40</td>
<td>1,10</td>
<td>.846</td>
</tr>
<tr>
<td>CDI-Anhedonia</td>
<td>5.00 1.79</td>
<td>4.36 2.38</td>
<td>0.79</td>
<td>1,10</td>
<td>.396</td>
</tr>
<tr>
<td>CDI-Negative Self Esteem</td>
<td>2.91 2.59</td>
<td>2.18 2.04</td>
<td>1.07</td>
<td>1,10</td>
<td>.324</td>
</tr>
</tbody>
</table>

*p≤.05 - two-tailed

The ANOVA that was run on length of stay in days and weeks in the program by age group revealed no significant differences. Therefore length of stay in the program did not appear to differ by age.
Predictability of EDNOS

The first logistic regression analysis that explored the predictability of EDNOS at baseline revealed that the model which contained all the family variables was an acceptable fit to the data $\chi^2 = 2.39$, df = 3, $p=.495$ accounting for 11.7% of the variance. Specifically, the variable family involvement (reflecting participation in family therapy) predicted the classification of EDNOS uniquely, $\text{Exp (B) } = 6.26$, at 95 CI for $\text{Exp (B) } = .712 - 55.025$. That is, those clients diagnosed with EDNOS are 6.26 times more likely to have participated in family therapy than those who are not diagnosed with EDNOS.

The second regression analysis that explored the predictability of EDNOS at baseline demonstrated that the model which contained age and all the clinical outcome variables was an acceptable fit to the data $\chi^2 = 7.69$, df = 8, $p = .464$ accounting for 28.7% of the variance. Specifically, the EDI-2 Bulimia and EDI-2 Body Dissatisfaction subscales predicted the classification of EDNOS uniquely, with EDI-2 Bulimia $\text{Exp (B) } = .690$, at 95 CI for $\text{Exp (B) } = .539 - .883$; and EDI-2 Body Dissatisfaction $\text{Exp (B) } = 1.162$ at 95 CI for $\text{Exp (B) } = 1.008-1.338$. That is, those clients diagnosed with EDNOS score .690 times higher on the EDI-2 Bulimia subscale than those who are not diagnosed with EDNOS. Likewise, those clients diagnosed with EDNOS also score 1.162 times higher on the EDI-2 Body Dissatisfaction subscale than those who are not diagnosed with EDNOS.

Conclusions and Recommendations

Profile of Youth Seen

The project helped to provide a profile of the adolescent clients seen in our program. The majority of clients are female and they appear to be in their mid teens. Moreover, the majority tend to be Caucasian in terms of race. As well, most families assessed tend to be nuclear in construction. These findings are similar to those of other reports (e.g., Couturier & Lock, 2006; Lock et al., 2006), although our sample of youth reflected a higher percentage of Caucasian race and somewhat lower percentages of nuclear family construction as well as slightly higher percentages of single parent families and reconstituted families. Some of this may be accounted for by the fact that the data of these other studies appear to be gathered in larger urban centers where there tend to be larger concentrations of people of different racial backgrounds than found in Durham Region. It is also possible that people who are not Caucasian in Durham are more prone to seek services in a larger urban center like Toronto which is close geographically, particularly for residents of Durham West, or they may be more reluctant to come forward to receive services for any variety of reasons. Moreover, the family construction data reported may be related to the racial background of clients and their families and this could contribute somewhat to the differences observed, although we did not assess for any interaction effects and these are not reported in the studies we reviewed. However,
multicultural research on ethnic minorities has pointed out that the family tends to be critical in the formation of identification for adolescent females and also that having strong family values, access to extended family and experiencing family unity represent strength and resilience for adolescents of colour (Vasquez & De Las Fuentes, 1999).

It is also possible that the data may be sample specific and over time and continued tracking with new clients to the program we can determine if these demographics change or stay consistent. It is important to note that much of the discussion about racial and family construction findings is speculative at this point. It was also stressed earlier that an important gap in the outcome literature has to do with lack of race and ethnicity data, and that more effort is needed to gather this critical information along with an assessment of factors that may influence treatment seeking behaviour (AHRQ, 2006).

Clients seen in our program tended to represent a mix of eating disorder diagnoses. Relatively equal numbers of clients presented with anorexia nervosa and EDNOS. Somewhat fewer youth presented with bulimia nervosa. Therefore, there does not appear to be one eating disorder type that predominates among the adolescents who attend our services. This also indicates that treatment services need to be flexible and adaptable to meet the varied needs of youth in terms of eating disorder symptomatology. Moreover, keeping in mind that the presentation of eating disorders is far more fluid than fixed over time, services need to remain adaptable to be able to meet the changing needs of youth as they arise in treatment.

The majority of adolescents were not involved with any other services while receiving treatment, besides being monitored by their family physician which was a requirement of our program. Those who were concurrently involved in other treatment reported seeing a counselor, psychologist, social worker or psychiatrist. The most common of these was reported to be a psychiatrist who largely provided pharmacotherapy.

It is also notable that a minority of clients seen in our program (N=11, 12.9%) reported involvement in intensive (day hospital or inpatient) eating disorder services. While this indicates that the majority of youth may not have had eating disorders of a severity to require intensive services and that outpatient services that we provide were appropriate to match and meet their needs, it also reflects that we do see youth clients in our service whose eating disorder is of significant severity to have required intensive services and who may still be struggling with quite severe symptomatology during involvement with us. This is particularly meaningful if we consider that relapse rates are high for eating disorders (AHRQ, 2006), that recovery which refers to both behavioural and psychological changes has often been defined to take a minimum of 4 years to occur while often taking much longer (e.g., Abraham 2000; Strober et al., 1999, as cited in APA, 2000), and if we remain cognizant of the fact that greater severity of symptoms and comorbidity are related to higher relapse rates (AHRQ, 2006; APA, 2000). Moreover, while the majority of our clients were never involved in intensive services this does not mean that some of these individuals would not have benefited from such services. Indeed while we did not track specific information about this, anecdotally we can report that at times we recommended more intensive services to youth in our program who resisted this
and/or whose families preferred that they be seen as outpatients. In these cases, as long as the family physician did not consider their status a medical risk, the youth successfully avoided hospitalization, despite the fact that their eating disorder was quite severe. This again reflects that outpatient services must be adaptable to provide treatment to youth presenting with varying severity of symptoms and symptoms whose severity often changes during the course of treatment. Indeed given, that wait times for intensive services are several months, at the least, and that aside from a few specialized intensive services that exist, that most hospitals do not have such funded services and will only admit for medical stabilization and discharge patients as soon as possible, it is often the case that outpatient services are trying to meet the intensive needs of clients with eating disorders. Ours is certainly one example of this and again anecdotally we have heard that other centers are experiencing similar challenges.

Regarding attendance to the program, while a substantial number of youth dropped out at assessment, the majority attended beyond the assessment phase. Moreover, while the number of sessions attended was quite variable, most youth attended 8 sessions. This seems to be consistent with the number of sessions that most clients are reported to attend before leaving treatment as noted in other research (e.g., Garfield, 1994, as cited in Marini et al., 2005; Marini et al., 2005). It was certainly encouraging that many youth (N=37, 43.5%) remained involved in the program beyond 8 sessions, particularly given that greater severity of symptoms and psychiatric comorbidity are linked with higher drop out rates as noted earlier. In addition, 50% of clients attended 10 or more sessions.

Data gathered also reflected the presence of family body image issues, family food issues and family exercise issues in some families of the youth seen. Similar percentages of families reported body image (25.9%) and food issues (29.4%) while a much smaller number (8.2%) of families reported exercise concerns. It is notable that there was missing information for a substantial number (30.6%) of families, and therefore the degree to which each of these factors influences eating disorder symptoms and the youth overall remains undetermined. It is clear that these issues were present in several families and given the literature on family factors, that has been presented, it is certain they were a point of influence. However, the specific influence of these issues on involvement in treatment, particularly family therapy, and on treatment outcome were not directly assessed and based on the notable amount of missing information could not be assessed within this project. Nevertheless, more specific focus on these variables is warranted, particularly given the disappointing observation that the majority of youth did not participate in family therapy sessions despite the identified need for this intervention based on assessment.

The fact that there was missing family information for many of the youth may be partly due to the fact that the majority of clients were not involved in family therapy and were, therefore, not seen beyond assessment. It is also likely that some youth and their families did not complete the family psychosocial assessment either. In addition, given that this information is sensitive in nature, it may have been difficult for families to broach or discuss, or even to acknowledge even if assessment were completed. Family therapy is often difficult to co-ordinate because of varying family schedules and varying
commitments to the process by family members, despite repeated efforts by program staff. As noted earlier, it has been well documented that eating disorder symptoms run in families, that family issues often play a role in eating disorders, that parental attitudes about weight, shape and eating influence body image and eating problems in their children, and that eating issues in families can interfere with treatment (see Steinberg & Phares, 2003). Moreover, given that family therapy has been noted to be beneficial for youth, particularly those with anorexia nervosa (AHRQ, 2006) the demonstrated reluctance of families and youth to participate in family therapy is concerning. Yet, the complexity of factors related to involvement in family therapy does help to explain why this is often the case. Given the fact that our program has also made changes in service delivery to provide more group treatment, to offer time limited family therapy, and to improve accessibility, it will be even more important to emphasize completion of family psychosocial assessment with our youth in order to identify those families where members are struggling with eating disorder issues and for whom family therapy may be more indicated and encouraged. It will indeed be important to reduce the number of cases for which family food, body image and exercise issues are unknown and this will be a definite next step for our program.

Differences by Age Group

Analyses revealed few differences between older and younger teens on a number of variables. They did not differ in terms of diagnosis at admission, concurrent treatment involvement, involvement in intensive services, family food issues, family body image issues, family exercise issues, family involvement with treatment, and length of stay. However, younger teens were found to have a lower ideal weight. It is reasonable that the ideal weight is lower for younger adolescents given that adolescence is a period of significant physical changes and growth and that as teens get older and approach adulthood, there is an expected increase in their weight. In terms of the clinical outcome measures, the only differences observed were higher self-esteem among younger teens, and that younger teens were less likely to stop engaging in activities they previously enjoyed. The differences reported are consistent with what is reported in the literature regarding age differences. That is, younger children have been found to have higher self-esteem than older children. This is consistent with research that has reported decreases in self-esteem for both males and females after elementary school (Basow & Rubin, 1999). In addition, the most important developmental task faced by adolescents is reported to be the formation of their identity (Lefrancois, 1983), which can lead to conflict regarding their self-concept, self-doubt and ultimately influence their self-esteem. We speculate that the overwhelming period of transition that adolescents face during this developmental period may influence their time and energy in relation to activities they previously enjoyed. Nevertheless, it is safe to say that for the most part youth in our program are not distinct in terms of presentation based on age and that the older and younger adolescents present similarly. It is important to keep in mind that this is based on the current sample that includes missing data for some of the categorical variables and rather small group sizes which affect statistical power. It will be important to replicate these findings with larger groups of youth and to assess for gender differences in the future.
Differences by BMI

Based on the findings, weight status did not distinguish among a number of categorical variables including receiving intensive services, involvement in concurrent treatment, family food issues, family exercise issues, family body image issues, and family involvement in treatment. In addition, no differences were found in terms of baseline ideal weight, age at admission or length of stay. However, on the clinical outcome measures, significant differences were found for self-esteem, drive for thinness, body dissatisfaction, ineffectiveness, total depression score, negative mood, and anhedonia. Specifically, the youth who had a BMI of less than 17.5 were found to be significantly different than the youth with a BMI 18-26.5 in all of these measures, and in comparison to the youth with a BMI > 27 on the measure of body dissatisfaction. The results indicated that youth who are underweight tend to report higher global self-esteem, a lower tendency to be preoccupied with dieting and weight loss, greater satisfaction with their body size and shape, a greater sense of control, competence and worthiness, less depressive symptomatology overall, less negative mood, a more positive self-evaluation, and greater ability to participate in pleasurable activities than youth who are average weight. They are also more satisfied with the body shape and size than those who are overweight as defined by our groupings.

These findings, at first glance, seem to suggest that being underweight is linked with healthier, more adaptive functioning on a number of indices. Nevertheless, it has been documented in the literature that an underweight status is often linked with denial of a problem (AHRQ, 2006; APA, 1994; Mussell et al., 2001, Walsh & Garner, 1997). For example it has been suggested that low drive for thinness may reflect denial of the current clinical state (Garner, 2004). Garner (2004) also reported that clients with anorexia nervosa are often satisfied with their weight, for a while and feel they can avoid weight gain which reflects low drive for thinness and body dissatisfaction scores. This helps to account for the observations made. Moreover, given the sociocultural pressures that have been well documented in the literature and the fact that the ideal of thinness is pervasive in our culture, an inability to meet this ideal is often associated with feelings of failure, inadequacy and self-deprecation. Indeed it has been noted that thinness has come to represent more than attractiveness for women. It is a symbol of their self-esteem, self-worth and self-definition (Rodin, Silberstein, & Striegel-Moore, 1985; Wiseman, Gray, Mosiman & Ahrens, 1992). Jones, Bennett, Olmsted, Lawson, & Rodin (2001) have also emphasized that the female adolescent years are often linked with shape and weight concerns and with disordered eating in Western countries where a thin body is believed to be desirable.

Differences Over Time on Clinical Outcome Measures

The only difference that emerged between admission and after a period of treatment was a reduction in negative mood over time. While an improvement in mood is a favourable result, particularly given that depression has been reported to be a strong predictor of body dissatisfaction in women with bulimia nervosa, and that depression may be a factor
in the development and maintenance of body dissatisfaction (Garner, 2004), these results are based on a very small sample size for which pre and post data were available. Therefore, the findings are tentative and need to be replicated with a larger number of clients. It is expected that other significant differences would emerge with a larger and more representative sample of clients. Improvement in symptoms of depression following treatment for an eating disorder is well documented (APA, 2000; Keys, Brozek, Henschel, Mickelsen, & Taylor, 1950, as cited in Jack, 2001; see Wilson, Fairburn, & Agras, 1997 for a review).

**Predictors of EDNOS**

The exploratory regressions that were run revealed interesting findings. For example, given that the majority of clients and their families did not engage in family therapy it was interesting to find that those with a diagnosis of EDNOS were more likely to participate in family therapy than those who did not receive this diagnosis. This data is based on small numbers and the proportion of variance accounted for is not large, but if it is replicated and found to be consistent or greater with a larger number of clients, it will be important in terms of identifying which clients may be more amenable to family therapy and to further explore the factors which might explain this amenability. It is important to also note that only family variables were used to predict EDNOS at baseline in one analysis based on exploring contributions of these variables by themselves. It might prove more fruitful in the future with larger numbers of clients to explore many more variables collectively for their potential influence and interaction.

When the clinical outcome measures were considered in terms of their predictability of EDNOS, it was found that a greater proportion of the variance was accounted for than with the family variables. Moreover, the findings reflected that clients diagnosed with EDNOS achieved higher scores on an index of symptoms that are characteristic of bulimia tendencies, and higher body dissatisfaction scores than those without this diagnosis. These findings are consistent with reports about shape and weight concerns in relation to BED that are important to the maintenance of binge eating (Hilbert et al., 2007). Given that EDNOS includes BED and that there are many individuals with EDNOS who engage in bingeing and/or weight compensatory behaviour such as vomiting or laxative abuse it is to be expected that a subscale that captures these behaviours would be predictive. Moreover, given that EDNOS has been reported to be the most commonly diagnosed eating disorder (AHRQ, 2006), and that 50% of people with BED are reported to be overweight, (Fairburn, 1995), it is not surprising that body dissatisfaction was predictive. Furthermore, body dissatisfaction has been reported to be influenced by weight or BMI such that individuals with a higher BMI are more dissatisfied with their body (Garner, 2004) and the finding that body dissatisfaction was a predictor of EDNOS is consistent with this.
Limitations of the Program Evaluation Project

A number of data were missing for some clients on some of the variables which resulted in smaller and unequal group sizes when examining client characteristics. In addition, it was difficult to control a number of variables and factors in our clinical setting and this likely influenced the results. Moreover, the small sample size of pre and post evaluation influenced statistical power of the analyses. Given all these limitations, the findings are preliminary and are not generalizable. As Lyons et al., (1997) would argue, our program evaluation reflects limitations in all three key areas identified to be important to the evaluation of clinical outcomes i.e., assessment of characteristics of the clients, assessment of change over time, and determination that change is due to the service delivery.

In relation to the pre and post evaluation, aside from the very small sample size, the timing of the collection of post measures was not standardized due to a number of factors that could not be controlled e.g., clients cancelling assessment appointments, and/or requesting less frequent appointments, and/or taking breaks from service for a number of reasons (school, employment, vacation). In addition, given our clinical setting, it was not possible to control for a number of factors that can influence findings such as involvement with other services, as well as the fact that clients differed in regard to the treatment services they received within our program (i.e., clients may have received any one or a combination of interventions that include individual therapy, family therapy, nutrition counselling, and group treatment that was based on a critical mass of clients being able to attend). Therefore, it is difficult to identify specifically what type of intervention or combination of interventions made a difference in the outcomes or had no influence on change. This is a limitation regardless of the number of significant findings between pre and post measures.

This evaluation did not include exploration of qualitative differences between those who dropped out early versus those who remained in the program for at least some treatment sessions. Studies tend to report only on those who complete treatment. However, it is equally important in any outcome assessment to try to identify differences between those who drop out and those who remain in treatment. Such differences not only help to further clarify the factors that potentially influence leaving treatment versus staying, but are also of predictive value in so far as identifying these factors early may help guide the direction of intervention so as to maximize the likelihood that clients will remain in treatment. Further efforts in this regard are definitely warranted.

Future Directions

Ongoing and future efforts in relation to the assessment of clinical outcomes need to be more rigorous in relation to obtaining information. Greater specificity and standardization of the assessment of family variables are indicated. This will help to reduce the potential influence of confounds because, given how the family variables are currently described, each one may refer to more than one specific behaviour. Thus, it is difficult to separate
out which specific component may be exerting an influence or interacting with other variables in a meaningful manner. Moreover, greater effort must be put forth to gather this information from all clients and their families assessed, even though this can be a challenging task for the many reasons cited earlier.

It is important to caution that these findings are preliminary and that more data must be collected at various points of treatment (Lyons et al., 1997) to assess for treatment effectiveness and outcome trends over time. Moreover, it will be important to determine if the findings replicate over time. As more data are collected, and multiple points of assessment occur, this will be possible. As well, it is important to keep in mind that many variables could not be controlled for and that this is a reality in clinical practice. However, with a larger sample and with statistical efforts to address covariates, further exploration of the influence and contribution of a number of variables can be carried out.

In the future, it will also be important to continue to gather more information about race and ethnicity of clients as this is a major gap in outcome research as previously noted. This will help to further define the characteristics of the clients seen in our program, and aid in the continued study of the clinical profile of the youth. In addition, this will facilitate exploration of treatment efficacy in relation to race or ethnic background.

As noted above, it will be beneficial to assess not only drop out rates but factors that distinguish between those who drop out and those who do not. This information can help to inform the treatment planning process by addressing the challenges faced by clients who have difficulty remaining in treatment. They are often overlooked in outcome studies.

Arguably, the most important information about program effectiveness is often in the form of individual, case-by-case outcome data gathered repeatedly over time. Clinically, these are the most informative and relevant data, even in comparison to average scores. They enable the determination of program benefit for individual clients, and also aid the treatment review process and future treatment planning for individual clients. These data can also be helpful with length of stay in the program, especially if current treatment services are not helpful for specific clients who may need more intensive services, or need to be referred elsewhere. Individual trends and changes in clinical outcome that are very meaningful are often masked by analyses of group averages. It is, therefore, essential that both are examined when looking at outcome as a means of obtaining the most comprehensive information of relevance to treatment effectiveness and planning that is possible. As an example, examination of the individual participant responses on each of the measures over time can certainly identify individuals who experience a reduction in symptomatology and consequent improvement in functioning in a number of areas. It also identifies individuals who continue to struggle and who also experience a decline in functioning in some areas and/or even intensification of symptoms that will be important to target and address in further treatment.

Efforts to engage in multisite program evaluation initiatives will also be beneficial for the many reasons outlined in the review section. There has already been discussion about such collaboration among a number of eating disorder services in the province and this is
expected to take shape in the next few months. To this end, efforts to standardize data collection times have been an ongoing discussion among the eating disorder network of services. As well, the use of standardized clinical outcome measures has been established across many services that will facilitate comparability.

As a final note, this grant has been much appreciated as a means of helping our program to build capacity to carry out program evaluation and enable us to take an important first step in evaluating characteristics and clinical outcomes of the youth we treat.

Knowledge Exchange Plan

The findings in this report will be presented to the Ontario Community Outreach Program for Eating Disorders (OCOPED). OCOPED provides training for community-based practitioners to better serve their clients with eating disorders and also provides education to educators about up to date prevention strategies which are key for youth. In addition, OCOPED works in collaboration with an established provincial network of specialized eating disorder services, and provides annualized training and networking opportunities for these service providers with a focus on up to date evidence based assessment and treatment practices. Moreover, OCOPED is coordinating a multisite network initiative on program evaluation to encourage the establishment of program evaluation practices among eating disorder services across the province. The provincial network consists of practitioners from 33 programs across the province. This report can help to support a province wide initiative by informing about what has been achieved so far in terms of establishing a program evaluation capacity that we can now build on and also highlighting future directions and opportunities.

The findings in this report will also be presented to the Program Council membership of the Mental Health and Pinewood Program as part of a program evaluation initiative and at an annual meeting of Mental Health and Pinewood Program staff as well as at clinical rounds. These results will also help provide valuable information regarding our clinical outcomes to the CELHIN representatives who form part of the provincial LHIN to better inform them about the characteristics and presentation of our specialized population, and what some important challenges and needs are of this population of youth. As well, the findings of this report will be presented to the Research Ethics Board of Lakeridge Health at the annual review of projects carried out to provide an update and discuss future program evaluation activities.

Future evaluation activities are planned to continue to build on the capacity established in this project and to address the recommendations highlighted for improving program evaluation activities. It is hoped that publication opportunities will arise from this important work.
References


APPENDIX A

LAKERIDGE HEALTH MENTAL HEALTH AND PINEWOOD CENTRE PROGRAM,
EATING DISORDERS PROGRAM

PROGRAM EVALUATION AGREEMENT

The Eating Disorders Program involves the completion of questionnaires at various times to assist in the assessment and diagnosis process and the evaluation of the effectiveness of the treatment services provided. The program is under the direction of Dr. Skevoulla Xinaris, Psychologist and Clinical Leader. This is a voluntary program with a non-dieting philosophy.

As the client, we are asking for your consent and permission to be able to use the questionnaire information collected as well as other demographic information about you to carry out a program evaluation of our program services and to report this information to our organization, to funding agencies such as the Ministry of Health and Long-Term Care who funds this program, and associated agencies that can help us advocate for eating disorders services, and to publish this information in relevant journals that have to do with advancing the field of eating disorders. You should also be aware that your records may be reviewed by the Research Ethics Board at Lakeridge Health, regulatory authorities, the Ministry of Health and Long-Term Care or other supervisory bodies, to check data and procedures. In return, we are committed to ensuring your confidentiality and anonymity in the review of your records and the reports we prepare so that there will be no way to identify you. Information that could identify you, such as your name, address, and Ontario Health Card number, will be kept by the Eating Disorders Program at Lakeridge Health site. Please be assured that all information reviewed and collected will be held in the strictest confidence, to the extent permitted by applicable laws and/or regulations. We would also be happy to provide you with any copies of any publications at your request, and to go over any findings of the evaluation conducted that pertains to your participation in the program.

Your decision to allow us to use this information for program evaluation and publication purposes is completely voluntary. Should you decide not to permit the use of your information, this will in no way affect your participation in our program.

Please indicate below if you agree to the use of the aforementioned for program evaluation and publication purposes. If there are any concerns with respect to this request, you may address them with Dr. Xinaris, 905-576-8711 extension 3645. If you have any questions about your rights as a participant and want to talk to someone who is not associated with this program, please contact the chair of the Research Ethics Board, Lakeridge Health at 905-576-8711.

I consent to having the above information used for program evaluation and publication purposes.

Name of Client (Printed)  Signature  Date

I do not consent to having the above information used for program evaluation and publication purposes.

Name of Client (Printed)  Signature  Date

EATING DISORDER TEAM STAFF MEMBER STATEMENT REGARDING CONSENT:

I have carefully explained to the client the nature of the above questionnaires, and have conducted the consent discussion.

Name of Staff (Printed)  Signature  Date

Revised 1/2/2008
## APPENDIX B
### ACCOUNTING SUMMARY OF EXPENSES

**Accounting Summary of Expenses**

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<th>Eligible Budget Items</th>
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<th>Actual Cost per Item ($)</th>
<th>Total Cost ($)</th>
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</table>

April 2007
Accountingsummaryofexpenses.doc v.1
Required Signatures:

Brian C. Lemon
Executive Officer (Please Print)

[Signature]
Executive Officer (Signature)

[Signature]
Witness (Signature)

Apr 24/08
Date

Apr 24/08
Date