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Implementing family based treatment in a child and youth eating disorder program: impact on admissions

https://doi.org/10.1515/ijamh-2017-0139
Received November 12, 2020; accepted November 15, 2020; published online November 19, 2020

Abstract

Objectives: Anorexia Nervosa (AN) treatment is frequently associated with high costs often due to the use of hospitalization. In Family Based Treatment (FBT) a main goal is to manage recovery of AN in the home environment rather than relying on lengthy hospital admissions. This study examined whether the use of hospitalization altered following the introduction of FBT to a youth eating disorders program in 2009.

Method: This study compared retrospective data of 71 female adolescent patients diagnosed with AN: 10 who received treatment as usual prior to the implementation of FBT; 10 who were treated immediately after FBT implementation; and a further 51 adolescents who received FBT since 2009.

Results: Results indicate that since the implementation of FBT there was a significant reduction in admissions to the medical ward and a significant reduction in cumulative length of stay on both the psychiatric and medical wards in adolescents presenting with AN.

Keywords: adolescent; anorexia nervosa; family based treatment; hospital admissions.

Eating disorders (EDs) are complex because of the variety of intrapersonal, interpersonal and societal factors that contribute to their onset and progression [1]. Anorexia Nervosa (AN) is one of the most difficult and expensive of all psychiatric disorders to treat, often resulting in substantial costs across multiple domains, including economic, social and loss of life [2].

AN is characterized by self-imposed or maintained weight loss such that the person is significantly underweight (for age and height) and overvalues shape and weight [3]. The peak age of onset of AN is in early to mid-adolescence but it may occur at any age [4]. Recovery from AN is possible; however, early diagnosis and intervention quickly following onset, coupled with effective therapy, may be critical in diverting a potentially protracted illness [5].

In recent years there has been significant progress in developing effective treatments for ED [6]. Weight restoration and minimising the risk of physical complications (e.g., hypothermia, hypertension, bradycardia, electrolyte abnormalities and cardiac arrhythmias) are considered the first priorities in AN treatment [7]. Hospitalization for the management of acute medical instability may be essential in preventing morbidity and mortality, however this is often costly [8, 9]. Lengthy hospital stays also may result in reduced contact with family and peers, and disruption of educational attainment, socialization and identity development [10].

Research supporting family treatments for AN in adolescents has emerged during the past 30 years. Family involvement in treatment for adolescents with AN is supported by clinical guidelines [11]. Family Based Treatment (FBT) was developed in the 1980s by Christopher Dare and colleagues at the Maudsley Hospital in London, and later manualized in 2001 [12] and revised in 2012 [13]. FBT is unique because it integrates theoretical ideas from a number of established family therapies [13]. The main four family therapy models that have contributed to FBT are the structural, strategic, Milan systemic and narrative models [12]. Traditional family therapy models conceptualize the symptom or problem as belonging to the entire family [14].

FBT is an outpatient treatment for children and adolescents with AN who receive guided assistance from their parents during the refeeding phase [13]. Several authors [15–17] found participants who received FBT gained weight significantly more quickly early in treatment and required fewer hospital days than those who received other types of psychotherapy (e.g., individual or Systematic Family Therapy).

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In 2007, Wallis et al. [17] conducted a study reviewing the first five years of the Maudsley Model of FBT at the Children's Hospital at Westmead. The study examined admission rates of the 52 patients who presented with AN two years pre FBT and 133 AN patients over the five years post FBT implementation. The patients pre-FBT had a mean of 2.08 (*SD*=1.88) admissions and the AN patients post FBT had a mean of 1.26 (*SD*=0.59) admissions. The results of this study identified a significant reduction of hospital admission rates for patients with AN over the five years that FBT was used when compared to patients who presented pre-FBT. However, reasons for hospitalization and lengths of stay were not discussed in Wallis et al.'s [17] study.

Another article by [18] reported on service changes (e.g., inpatient admissions, readmissions and length of stay) from 2004 to 2010 after implementing FBT to outpatient care. Results were positive, including a 56% decrease in admissions, a 75% decrease in readmissions, and a 51% decrease in total bed days. They concluded that despite the challenges associated with implementing a new treatment model the patient and service benefits were considerable. Of note was a service wide immediate reduction in cost of treatment and most patients completing FBT had better remission rates and a reduced illness duration.

The aim of the current study was to replicate and extend upon prior research by Wallis et al. [17] and Hughes et al. [18] by evaluating potential changes in adolescent AN admissions occurring as a result of the implementation of FBT within a specialist ED service. In addition to examining the number of admissions, the current study separated the data for medical and psychiatric admissions and evaluated duration of hospitalization. It was hypothesized that the introduction of FBT would be associated with reduced number of admissions and length of hospital stay for both medical and psychiatric admissions.

Method

A retrospective program evaluation was undertaken to assess potential changes associated with introducing FBT to a public Child and Youth Eating Disorders Program on the Gold Coast, Australia, in 2009. From 2009, FBT was offered in the program as an outpatient service for AN, replacing the previous outpatient therapy of "case management" (TAU; defined below). University and Government Human Ethics Review Boards approved the study.

Participants

Participants were 71 female adolescent patients aged 10–18 years (*M*=14.73, *SD*=1.76) consecutively referred to the specific Child and Youth Mental Health Service between January 2006 and December 2015 with a diagnosis of AN or Eating Disorder Not Otherwise Specified with similar characteristics to AN [19]. Outcomes of 10 patients who received treatment as usual (TAU) prior to 2009 were compared to 61 patients who received FBT after its implementation in 2009. The 10 TAU patients comprised all available cases with a complete data set of information pertaining to length of stay and number of admissions.

Treatment

TAU. Treatment as usual (TAU) refers to the allocation of the patient to a Case Manager who would provide therapeutic intervention as defined appropriate by their discipline (e.g., Psychologist, Social Worker or Clinical Nurse). Medical monitoring (e.g., weight, height, blood pressure, pulse, and other relevant indicators) by a Clinical Nurse, Resident/Registrar or Consultant was also included in the treatment plan.

FBT. Family Based Treatment is a manualized (a full description can be found Lock & Le Grange, [13]), outpatient treatment that progresses through three distinct phases. Treatment includes 20 sessions over a 12-month period, focused on weight restoration, restoring control of eating to the patient and returning to normal adolescent development. The FBT approach encourages parents to have a large role in their child's recovery by focused on weight restoration and a return to normal eating. In the second phase parents are provided assistance to transition eating and weight control back to their child in an age-appropriate manner. Finally, the focus is on assisting the adolescent to establish a healthy adolescent identity free from anorexia. Like in TAU, medical monitoring was also provided alongside FBT. FBT was delivered by two senior psychologists with introduction and advanced training and supervision of the model, in addition both therapists received regular supervision from an experienced FBT therapist.

Inpatient admissions. If hospital admissions were required, adolescents were admitted to either a medical or psychiatric ward. Medical admissions were provided to adolescents who were physically compromised (e.g., hypothermia, hypertension, bradycardia, electrolyte abnormalities, or cardiac arrhythmias) and required nutritional rehabilitation (such as nasogastric feeding), with the purpose of achieving medical stability. Some patients however may reach medical stability whilst they are still reliant on nasogastric feeding and have not attained adequate oral intake to be discharged home. This may be due to a number of reasons including the child's mental state and/or risk, strength of the illness, inconsistent weight gain or prolonged food refusal. A decision for transfer to the psychiatric ward may include these based on inadequate nutrition and also the parent's ability and/or availability to manage and support oral re-feeding at home. Therefore, the purpose of psychiatric admission was for further nutritional support following medical stability or for more intensive support and treatment of a comorbid diagnoses.

Measures

Method of evaluation

A retrospective clinical audit of hospital and outpatient records (paper based and computer systems) was

undertaken. Participant data were retrieved and reviewed to obtain the relevant information required for the current study including demographics, diagnosis, and treatment provided including number of admissions and lengths of stay (LOS).

Expected body weight percentage (%EBW). %EBW was calculated using the Centre for Disease Control growth charts for expected weight for gender, age and height [20]. In this formula, %EBW=BMI/50th percentile BMI for gender, age and height × 100.

Number of admissions. For the purpose of the current study, hospital admissions to either the medical or psychiatric ward were counted as separate admissions (e.g., if there were eight days on the medical ward and four days in the psychiatric ward before discharge, this was counted as one medical admission and one psychiatric admission).

LOS. LOS was calculated as the number of days the adolescent was in the hospital including the day the adolescent was admitted, though not including the day they were discharged. Each hospital admission had its own LOS calculation.

Cumulative LOS. For the purpose of the current study the data used in LOS analyses were cumulative measures of LOS. These measures were calculated by adding the LOS for all medical admissions and all psychiatric admissions, respectively. Therefore, each participant had a cumulative LOS for psychiatric admissions and a cumulative LOS for medical admissions.

Length of treatment episode. Length of treatment episode for the patient's involvement with the service was calculated individually from each participants' admission date to discharge date. Similar to the calculation for LOS the admission date was calculated as one day, though the discharge day was not included as a day.

Statistical analysis

SPSS Statistics 22 was used to compare LOS and number of admissions to both the psychiatric and medical wards, as well as patient characteristics, before and after FBT implementation. Because variables did not meet assumptions for parametric tests (due to non-normal distributions and/or heterogeneity of variance), the non-parametric independent samples Mann–Whitney U test was used to test for differences between groups. There was approximately 70% power to detect an effect of similar size to the Wallis et al. [17] study. The proportions of patients receiving admissions were compared using Fisher's Exact Test.

Results

Sample characteristics

Independent samples Mann–Whitney U tests were conducted to determine any differences between groups with regards to patient characteristics. Descriptive and inferential statistics are shown in Table 1. No significant difference was observed between TAU and FBT groups for patients' age at the start of treatment. However, patients were significantly younger when they completed FBT than when they completed TAU. Correspondingly, treatment duration was significantly shorter with use of FBT than TAU.

An ANOVA was conducted for %EBW to assess differences between the TAU group and the FBT group. No significant difference was found for %EBW at the start of treatment. At the end of treatment, patients who had received FBT had significantly higher %EBW than those who received TAU.

Table 1: Comparison of participant characteristics at the start and end of treatment for TAU and FBT groups.

Measure	Start of treatment			End of treatment		
	TAU *M (SD)* Range	FBT *M (SD)* Range	p-Value	TAU *M (SD)* Range	FBT *M (SD)* Range	p-Value
Age, years	14.97 (2.36) 10.89–18.03	14.70 (1.66) 10.63–17.31	0.541	17.51 (1.91) 12.56–19.16	15.81 (1.68) 11.21–18.56	0.002
%EBW	79.32 (7.38) 70.04–93.89	82.75 (9.51) 61.69–113.82	0.241	91.48 (12.30) 79.97–123.01	96.13 (5.74) 79.08–108.48	0.009
Treatment duration, months				30.46 (14.78) 11.10–55.92	13.38 (5.76) 1.77–31.05	0.000

TAU, Treatment as Usual; FBT, Maudsley Family Based Therapy; %EBW, Percentage of Expected Body Weight. p-Values shown for Mann–Whitney U test.

Admissions data

A series of independent samples Mann–Whitney U tests was conducted to compare the LOS and number of admissions to the psychiatric or medical wards before and after implementation of FBT. Descriptive and inferential statistics are shown in Table 2.

There were significant decreases in the number of psychiatric admissions and cumulative LOS for psychiatric admissions, for patients treated with FBT compared to those treated with TAU. There was no difference between TAU and FBT in the number of medical admissions or cumulative LOS for medical admissions.

The proportions of patients who were admitted to hospital as part of TAU or FBT were compared using Fisher's Exact Test (see Table 2). Fewer patients received psychiatric admissions in conjunction with FBT but the proportion of patients receiving medical admissions did not change significantly between TAU and FBT.

Discussion

This study evaluated retrospective clinical data to examine the impact on admission rates and cumulative LOS in hospital after implementing FBT in a specialist Child and Youth ED service.

Weight restoration and minimising the risk of physical complications are the first priorities in AN treatment [21]. FBT's main goal is to manage recovery of AN in the home environment rather than relying on lengthy hospital admissions [16]. In FBT, hospital admissions for short-term medical stabilisation are utilized if necessary, however, the role of parents as a central resource to bring about recovery is viewed with regards to creating permanent change [22]. It was hypothesized that the introduction of FBT would be associated with a reduced number of admissions and LOS, as found by Wallis et al. [17] and similar to that of Hughes et al. [18] which reported an almost 60% decrease in admissions and reduction by half to the total bed days for these patients. Our findings confirmed a significant reduction in psychiatric admissions and significantly fewer days in hospital in the psychiatric ward. No significant difference was observed for admission rates to medical wards or number of days in the medical ward following the implementation of FBT.

Table 2: Comparisons of admissions between the TAU and FBT groups.

Measure	TAU *M (SD)* Range	FBT *M (SD)* Range	p-Value
Number of psychiatric admissions[a]	1.20 (1.81) 0–6	0.21 (0.55) 0–3	0.002
Number of medical admissions[a]	1.00 (1.89) 0–6	0.69 (0.67) 0–3	0.583
Cumulative LOS psychiatric[a]	35.20 (60.54) 0–186	6.44 (16.11) 0–67	0.018
Cumulative LOS medical[a]	58.30 (101.68) 0–258	16.79 (22.66) 0–140	0.674
Any psychiatric admission[b]	n (%) 6 (60%)	n (%) 10 (16%)	0.007
Any medical admission[b]	4 (40%)	36 (59%)	0.315
Any admission[b]	8 (80%)	38 (62%)	0.477

[a]p-Values shown for Mann–Whitney U test. [b]p-Values shown for Fisher's Exact Test.

Among studies which have examined the effect of FBT on hospitalizations [17, 18], the current study is the first to have separated the effects into psychiatric and medical admissions rather than grouping the effects into one. This adds further knowledge to the literature given that the findings indicate a significant reduction in the number of psychiatric admissions as well as fewer days in hospital overall. Implications of the current study suggest that with the implementation of FBT, adolescents with AN are likely to spend less time in hospital throughout their treatment compared with a case management approach with a more individual focus. Therefore, with reduced amount of time in hospital, adolescents will have less disruption to life in academic, social and developmental domains. Furthermore, FBT implementation is likely to reduce the cost of services. Inpatient admissions for patients with AN are costly; in Australia, the daily public cost for inpatient treatment of AN in adolescents is approximately AUD$1662 [23]. Research has suggested that outpatient treatment of AN costs approximately 10% of the cost of in-patient care [24].

The current study is not without its limitations. It is not possible to determine unequivocally if the reduction in hospital use was the result of FBT implementation in isolation, due to lack of control for other variables. However, changes within the wider service were minimal across this time period, e.g., paediatric admission criteria and management protocols did not change across the time periods when data were collected. Furthermore, the current study does not include any data on specific ED symptom reduction apart from %EBW, thus limiting the outcomes. However, it may be reasonable to suggest that the introduction of FBT had an impact on a reduction of hospital use in the treatment of adolescent AN in this particular service. Further, analysis of patient %EBW and

treatment duration in the current study suggests adolescents treated with FBT recover significantly quicker and showed equivalent increases in %EBW at the end of treatment when compared to those treated with case management as TAU. Lastly, power and generalizability may be affected by the small sample size of the TAU group. This limitation could be overcome by using multiple sites to compare and increase the data set. The results of the current study could be cross checked with similar services treating adolescents with FBT.

Acknowledgments: This research was conducted as part of a Master in Clinical Psychology degree for Hayley Thompson at Griffith University, Gold Coast, Australia. No sponsor or grant was sought for this research

Research funding: None declared.

Author contributions: All authors have accepted responsibility for the entire content of this manuscript and approved its submission.

Competing interests: Authors state no conflict of interest.

Informed consent: The Institutional Review Board determined that informed consent from individuals included in this study was not required.

Ethical approval: The local Institutional Review Board reviewed and approved the study HREC/16/QGC/107.

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