



Published in final edited form as:

Clin Pediatr (Phila). 2012 September ; 51(9): 888–891. doi:10.1177/0009922811410876.

Appointment Attendance in a Pediatric Weight Management Clinic

Elizabeth E. Halvorson, MD¹ and Joseph A. Skelton, MD, MS^{1,2}

¹Wake Forest University School of Medicine, Winston-Salem, NC, USA

²Brenner Children's Hospital, North Carolina Baptist Hospital, Winston-Salem, NC, USA

Introduction

Pediatric weight management clinics offer an intensive, family-centered approach to the obesity epidemic.^{1–5} These clinics typically involve weekly to monthly visits with a focus on behavior modification, improved nutritional intake, and increased physical activity. The intensity of the treatment (frequent visits, family participation) likely contributes to the high rates of attrition, reported to range from 27% to 73%.⁶ It is unknown if missed and canceled appointments are a significant problem in pediatric weight management clinics and if they are linked to treatment attrition. Data from pediatric pulmonology, allergy, and asthma clinics indicate that insurance status, season of the year, family ethnicity, length of waiting time for an appointment, and the hour of the appointment within the day can all contribute to appointment attendance.^{7–11} To our knowledge, there are no studies in the literature about appointment attendance in pediatric weight management clinics. The goal of this study was to identify sociodemographic factors contributing to missed and canceled appointments in a tertiary care pediatric weight management clinic and to determine any associations with weight outcomes and attrition from treatment.

Methods

Brenner FIT (Families In Training) Program

The Brenner FIT (Families In Training) Program is a pediatric weight management clinic based in Brenner Children's Hospital, part of Wake Forest University Baptist Medical Center. The treatment team includes a pediatrician, dietitian, family counselor, physical therapist, and exercise specialist. Treatment is considered to be family focused, where all family members (parents/caregivers, siblings, grandparents) are encouraged to actively participate. The program accepts children by physician referral, ages 2 to 18 years who are obese (body mass index (BMI) 95th percentile for age and gender) with one or more obesity-related comorbidities. Treatment lasts 1 year, divided into 3 phases. The first phase, the most intensive, includes biweekly visits with the treatment team and focuses on behavior change and addresses education needs of the family. The second and third phases of the program are less intensive (monthly visits) and are used to establish consistency and maintenance of behavior changes. Physician appointments occur at baseline and every 4 months to review laboratory studies, weight status, and overall progress. Education, training,

© The Author(s) 2011

Corresponding Author: Joseph A. Skelton, Department of Pediatrics, Wake Forest University School of Medicine, Medical Center Boulevard, Winston-Salem, NC 27157, USA, jskelton@wfubmc.edu.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

and support are provided to assist family members in implementing behavior change, appropriately managing adverse reactions to lifestyle changes, and addressing psychosocial problems. Families receive automated reminder phone calls 3 days and 1 day prior to their appointment.

Clinical Database

The Brenner FIT Program uses a clinical database to track outcomes and patient progress, with data entered after every visit, including sociodemographics, physical measures and available laboratory studies, medical history, family assessment by counselor, family structure, insurance, weight management history, amount of sedentary activity, and assessment of weight-related comorbidities by the clinic physician. Follow-up data, such as height and weight, are entered every 4 months during the physician reassessment.

Study Design

All patients seen for their initial visit between November 7, 2007 and November 9, 2009 were abstracted from our clinical database. The appointment history for each patient was investigated in the outpatient electronic medical record. Each appointment was identified as attended, missed, or canceled/rescheduled; the timeframe of and reason for cancellation, if given, were recorded.

Data Analysis

Preliminary analyses were performed to determine significant relationships between predictor variables and the primary outcome (number of missed or canceled appointments) using analysis of variance and linear regression. Similar analyses were performed with secondary outcomes: change in BMI and BMI *z* score, and attrition from the program before completing the initial, intensive 4-month phase of treatment. All statistical analyses were performed using SAS Enterprise Guide version 4 with SAS version 9.1 (SAS Institute, Cary, NC). This study was approved by the Wake Forest University School of Medicine Institutional Review Board.

Results

A total of 194 patients and families were seen for initial evaluation between November 7, 2007 and November 9, 2009. Patient characteristics are summarized in Table 1.

A total of 2240 appointments were scheduled over the study period, of which 226 (10%) were missed and 603 (27%) were canceled. Reasons given for canceling or rescheduling an appointment are shown in Table 2. Most (55%) cancellations occurred on the day of the scheduled appointment, with 22% canceled 1 day prior. Only 23% were canceled in the requested time frame (48 hours before the appointment).

Children with reported average or above average performance in school had fewer missed appointments (0.321; 95% confidence interval [CI] = 0.010–0.631, $P = .04$). Similarly, employed mothers had fewer canceled appointments (0.632; 95% CI = 0.203–1.060, $P = .004$). No other associations were found between sociodemographic variables and missed or canceled appointments.

Of the 84 participants who completed the first 4-month phase of treatment, those whose BMI increased had more missed appointments ($P = .013$ by *t* test). However, this finding did not persist with a more sensitive indicator of weight change, BMI *z* score ($P = .07$). Families that eventually dropped out of treatment had more missed appointments ($P = .03$ by χ^2 analysis).

Discussion

This is the first study to our knowledge examining the sociodemographic and health-related variables correlated with missed or canceled appointments in a pediatric weight management clinic, and subsequent effects on patient outcomes. Overall, a significant proportion (one third) of scheduled appointments were either missed or rescheduled. Most cancellations did not adhere to the requested 48-hour advance notification. We identified a significant association between children with self-reported poor performance in school and missed appointments. Surprisingly, working mothers were less likely to cancel appointments. This finding may be because working mothers are accustomed to managing their time effectively and plan sufficiently for clinic visits. Furthermore, we identified a relationship between the number of missed appointments and program success (based on change in BMI) and attrition.

Our rate of nonattendance was similar to those reported at pediatric pulmonology and allergy clinics, reported at 31%⁹ and 33%,⁸ respectively. A pediatric asthma clinic published an 8% incidence of missed visits,¹¹ similar to our rate of 10%. Unfortunately, when cancellations occur less than 2 days before the visit, those appointments times remain open, which represents a dissipation of time and resources for the clinicians involved and limits ability to schedule other patients for those time slots. Additionally, as seen in our study, these missed treatment opportunities can affect a patient's success and participation in weight management.

There are limitations to this small study. Data elements were obtained from clinical evaluations and family self-report. Medicaid insurance was used as a marker for socioeconomic status and may not reflect the true socioeconomic status of a family. A comparison clinic population was not used; however, the focus of the study was to report, for the first time, attendance patterns in a pediatric weight management clinic, and given the unique aspect of pediatric weight management clinics, comparisons would be difficult to make. The overall size of this study is small but can still be useful to other programs, as many have been developed over the past several years.¹² Though this study is retrospective, most data were collected prospectively in a clinical database, which can be useful in evaluating clinical effectiveness and outcomes.¹³

This study demonstrates that appointment attendance is a significant concern affecting pediatric weight management. Our results suggest that a presumed barrier, maternal employment, did not affect attendance in our sample, implying that other factors were at play. Even with parents taking the time to cancel appointments, they did not reschedule far enough in advance for clinics to make use of that time. Missing visits appears to lead to treatment dropout all together. More studies of clinic operations are needed to lessen waste of clinician time, and hopefully cost of treatment. Pediatric weight management programs are unique compared with other outpatient clinics (multidisciplinary, longer appointment times, family participation) and may require different approaches to study. Improvement in participation may also improve outcomes, particularly if it prevents attrition from treatment.

Acknowledgments

The authors would like to thank Karen Klein (Research Support Core, Office of Research, Wake Forest University Health Sciences) and Dr Bettina Beech (Department of Social Science and Health Policy, Division of Public Health Sciences, Wake Forest University School of Medicine) for their assistance in editing this article, and Suzanne Howell (Department of Pediatrics) for her assistance in the conduct of the study.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article:

Dr Skelton was supported in part by a grant from The Duke Endowment (No. 6110-SP) and by NICHD/NIH Mentored Patient-Oriented Research Career Development Award (K23 HD061597).

References

1. Barlow SE. Expert committee recommendations regarding the prevention, assessment, and treatment of child and adolescent overweight and obesity: summary report. *Pediatrics*. 2007; 120(suppl 4):S164–S192. [PubMed: 18055651]
2. Kirk S, Scott BJ, Daniels SR. Pediatric obesity epidemic: treatment options. *J Am Diet Assoc*. 2005; 105(5 suppl 1):S44–S51. [PubMed: 15867895]
3. Kirk S, Zeller M, Claytor R, Santangelo M, Khoury PR, Daniels SR. The relationship of health outcomes to improvement in BMI in children and adolescents. *Obes Res*. 2005; 13:876–882. [PubMed: 15919841]
4. Savoye M, Shaw M, Dziura J, et al. Effects of a weight management program on body composition and metabolic parameters in overweight children: a randomized controlled trial. *JAMA*. 2007; 297:2697–2704. [PubMed: 17595270]
5. Skelton JA, Demattia LG, Flores G. A pediatric weight management program for high-risk populations: a preliminary analysis. *Obesity (Silver Spring)*. 2008; 16:1698–1701. [PubMed: 18451781]
6. Skelton JA, Beech BM. Attrition in pediatric weight management: a review of the literature and new directions. *Obes Rev*. 2011; 12:e273–e281. [PubMed: 20880126]
7. Dreiherr J, Froimovici M, Bibi Y, Vardy DA, Cicurel A, Cohen AD. Nonattendance in obstetrics and gynecology patients. *Gynecol Obstet Invest*. 2008; 66:40–43. [PubMed: 18264023]
8. Dreiherr J, Goldbart A, Hershkovich J, Vardy DA, Cohen AD. Factors associated with non-attendance at pediatric allergy clinics. *Pediatr Allergy Immunol*. 2008; 19:559–563. [PubMed: 18208462]
9. Goldbart AD, Dreiherr J, Vardy DA, Alkrinawi S, Cohen AD. Nonattendance in pediatric pulmonary clinics: an ambulatory survey. *BMC Pulm Med*. 2009; 9:12. [PubMed: 19366453]
10. Schwimmer JB, Burwinkle TM, Varni JW. Health-related quality of life of severely obese children and adolescents. *JAMA*. 2003; 289:1813–1819. [PubMed: 12684360]
11. Yoon EY, Davis MM, Van Cleave J, Maheshwari S, Cabana MD. Factors associated with non-attendance at pediatric subspecialty asthma clinics. *J Asthma*. 2005; 42:555–559. [PubMed: 16169788]
12. Eneli, IU.; Patel, D.; Cunningham, A.; Hinton, T.; Stephens, J.; Murray, R. A comprehensive survey of U.S. pediatric obesity programs. Poster presented at: 2008 Pediatric Academic Societies' annual meeting; May 3–6, 2008; Honolulu, HI.
13. Padkin A, Rowan K, Black N. Using high quality clinical databases to complement the results of randomised controlled trials: the case of recombinant human activated protein C. *BMJ*. 2001; 323:923–926. [PubMed: 11668142]

Table 1

Characteristics of Patients in the Brenner FIT (Families In Training) Clinic (N = 194)

Variable	Percentage (n)
Age in years (mean \pm SD)	12 \pm 3.4
Body mass index in kg/m ² (mean \pm SD)	37 \pm 10
Body mass index (z score \pm SD)	2.61 \pm 0.50
Female gender	57 (110)
Race/ethnicity	
White	48 (93)
African American	31 (61)
Hispanic	15 (29)
Other	6 (11)
Parent structure	
Dual parent	55 (105)
Single parent	38 (72)
Other (joint custody, foster care, etc)	7 (14)
Employment	
Mother (n = 189)	57 (107)
Father (n = 185)	49 (91)
Medicaid insurance	52 (85)
Distance of family home from clinic in miles (mean \pm SD)	26 \pm 28
Stressors present in family	
Medical	23 (41)
Financial	49 (90)
Relationship	47 (86)
Other	16 (26)
Any stressor	74 (143)
Parental history of mental health treatment	27 (48)
Child history of mental health treatment	30 (57)
School	
Above average performance	25 (47)
Average performance	54 (100)
Below average performance	21 (38)
Special education received in school	15 (28)
Developmental delay	14 (19)
Previous weight management attempts	26 (48)

Table 2

Reasons for Cancellations

Description	Percentage (Frequency, N = 420)
Illness	22 (94)
Cannot miss work	20 (84)
Inconvenient	16 (70)
Cannot miss school	15 (66)
No reason given	9 (38)
Transportation	6 (26)
Out of town	3 (12)
Weather	2 (9)
Family death	1 (6)
Cannot miss sports	1 (5)
Financial	1 (5)
Dissatisfied with clinic	1 (3)
Labs not obtained before visit	1 (3)
Court summons	1 (2)