



# Eating Disorders

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## Eating Disorders Treatment Patterns by Age

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*This longitudinal, retrospective study examines patterns in eating disorder outpatient mental health treatment by age. Participants (n = 5,445) included patients treated for an eating disorder, with claims for treatment from Cigna, a leading health care insurance provider in the United States. Treatments for individuals 55 and older were less expensive and shorter than for any other age group. Treatments for individuals 44–55 were less expensive than for 15–24. Individual therapy is the most common treatment modality, but younger individuals are likely to receive family therapy. Younger individuals have lower dropout and higher return to care rates.*

Healthcare expenses for eating disorder treatment are substantial (Pohjola, 2010). Direct costs of anorexia nervosa treatment, for example, range from \$2,291 to \$8,042 annually (Stuhldreher et al., 2012). Eating disorders are associated with increased health concerns and exceptionally high mortality rates (Arcelus, Mitchell, Wales, & Nielsen, 2011; Preti, Rocchi, Sisti, Camboni, & Miotto, 2011).

Despite the significance of these costs, little research has assessed the health services use and expenditures of individuals with eating disorders (Striegel-Moore, DeBar, Wilson, Dickerson, & Rosselli, 2008; Striegel-Moore & Leslie, 2000). Research is needed to identify the types and frequency of services accessed for eating disorder treatment (Striegel-Moore et al., 2008).

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Additionally, little research has assessed service use by age (Stuhldreher et al., 2012). This study will address this gap, examining eating disorder outpatient mental health treatment patterns and associated direct costs by age, using data from a leading health care insurance provider in the United States.

## LITERATURE REVIEW

The literature review will summarize the current research on mental health service utilization and cost. It will then address specific treatment concerns by age.

### Normative Path of Mental Health Treatment

*Treatment modalities.* Traditionally, eating disorders have been treated primarily with individual therapy. Cognitive-behavioral therapy is the most common mode of therapy, and has been shown to help clients decrease compulsive behavior and return to a healthy weight (Lock, Couturier, & Agras, 2008). Among adolescents with anorexia nervosa, an individually focused treatment was associated with stronger therapeutic alliance than family therapy treatments (LoTempio et al., 2013), although this difference was not found among adolescents with bulimia nervosa (Zaitsoff, Doyle, Hoste, & Le Grange, 2008).

Family therapy methods are gaining prominence in eating disorder treatment. Preliminary research suggests that family therapy is particularly effective for adolescents, who are most influenced by their family dynamics (Dare & Eisler, 1997), and individuals with more severe eating disorder psychopathology. A review conducted by the UK National Institute of Health and Clinical Excellence (NICE) found that the best outcomes for anorexia nervosa in patients under 18 years of age were obtained with family therapy (NICE, 2004). Le Grange, Swanson, Crow, and Merikangas (2012), found in a randomized control trial that psychopathology severity is a moderator of treatment outcome, and individuals with more severe eating psychopathology are likely to have better outcomes in a behavioral family treatment than an individual approach. There may be something distinctive about family therapy for eating disorders specifically, as it often includes a central focus on encouraging parents to manage their child's eating (Eisler, 2013). However, Eisler (2013) notes that "while ED-focused family therapy may have distinct features it is still family therapy" (p. 1).

*Number of sessions.* Manualized treatments for eating disorders generally recommend from 18 (i.e., Fairburn, 2008) to 40 sessions (i.e., Murphy, Straebl, Cooper, & Fairburn, 2010). NICE recommends that outpatient treatment for adults with anorexia nervosa should be "of at least 6 months'

duration,” while outpatient treatment for bulimia nervosa should consist of 16 to 20 sessions of cognitive behavior therapy (NICE, 2004). However, there are some shorter treatment approaches (i.e., eight sessions of cognitive-behavioral guided self-help; Striegel-Moore et al., 2010).

There is little research on how actual service use compares with these recommendations. In two studies of private insurance claims for adults, estimates of outpatient treatment length range from 4.7 annual visits (Striegel-Moore et al., 2008) to 18.1 (Striegel-Moore & Leslie, 2000). However, treatment length may be influenced by age and diagnosis. In one study of private insurance claims, 25- to 34-year-olds with anorexia nervosa had lower mental health visits, while those older than 35 had higher mental health visits (Striegel-Moore et al., 2008). There were no significant age interactions in the other eating disorder diagnoses (Striegel-Moore et al., 2008).

*Treatment provider.* Little research has assessed who provides mental health treatment for individuals with eating disorders. One study in Australia assessed treatment provider and found that 85.9% of participants who had sought treatment for an eating disorder had received treatment from a general practitioner and 11.3% had received treatment from a psychologist and/or psychiatrist (Mond, Hay, Rodgers, & Owen, 2007).

### Treatment Concerns by Age

Though eating disorders have traditionally been considered disorders of adolescents and young women, recent evidence suggests that eating disorders often occur across the life span. Though there are no established prevalence rates among older individuals, eating disorder hospitalization among individuals (of both genders) ages 30–45 made up 25% of all hospitalizations in 2005–2006, and eating disorder hospitalizations among individuals over 45 were an additional 21% (Agency for Healthcare Research and Quality, 2009). Prevalence of binge eating disorder in older women is particularly well established; research suggests that nearly half of all binge eating disorders begin in adulthood (Abbott et al., 1998).

*Youth.* While little research has assessed changes in symptoms based on age, preliminary research suggests that body image dissatisfaction and weight concerns are likely to increase with age (Davison, Markey, & Birch, 2003). Additionally, early age of onset may be associated with poorer treatment outcomes. In studies of binge eating disorder, an early age of onset is related to poor outcomes (Safer, Lively, Telch, & Agras, 2002).

*Later life.* Eating disorders in later life may be particularly harmful and difficult to treat. Midlife patients, on average, have a significantly longer duration of illness and higher rates of prior inpatient ED treatment, suicide attempts, and sexual abuse (Cumella & Kally, 2008). Older individuals with eating disorders are at a serious risk for cardiovascular disease, osteoporosis, kidney disease, and brain damage (Cohen, 2002). Partially due to

these concerns, meta-regression indicates that age is associated with an even higher mortality rate (Arcelus et al., 2011). Treatment is particularly complicated if the eating disorder is long-standing; individuals with long-standing, undetected eating disorders are more likely to have an eating disorder as part of their identity, are less likely to be pressured into treatment, and are more likely to refuse programs geared primarily towards younger persons (Cohen, 2002).

## Research Questions

The purpose of this study is to assess mental health service use and cost for eating disorders across the life course. The research questions for this study are as follows:

*Research Question 1 (RQ1):* What is the duration and direct cost of outpatient eating disorder mental health treatment by age? As mid and later life patients have a significantly longer duration of illness and higher rates of prior inpatient treatment (Cumella & Kally, 2008), we would expect that treatment duration would be longer and treatment costs would be higher for individuals in later age. This would be consistent with the limited past research on treatment duration, which was conducted only with adults (Striegel-Moore et al., 2008).

*RQ2:* What are the differences by age in modality of treatment? Family therapy is acknowledged as an essential treatment for adolescents, who are most likely to be living with and subject to the structure of their family of origin. We would therefore expect that children and adolescents would be more likely to receive family therapy.

*RQ3:* What are the differences in return to care and dropout by age? As individuals with long-standing, undetected eating disorders are more likely to refuse programs (Cohen, 2002), we expect lower rates of return-to care and higher rates of dropout for older individuals.

## METHOD

### Design

The current study is a longitudinal, retrospective study using administrative data from the behavioral health division of Cigna, a leading health care insurance provider in the United States. The use of administrative data for retrospective statistical analysis is allowed by the Health Insurance Portability and Accountability Act of 1996 (HIPAA). (For a complete description of data cleaning, see Crane & Payne, 2011).

## Participants

Participants ( $n = 5,445$ ) included all patients diagnosed with anorexia nervosa, bulimia nervosa, or eating disorder not otherwise specified (EDNOS) from 2001 to 2006, who had claims for outpatient treatment. This constitutes 1.1% of all participants receiving services for individual and/or family therapy during this timeframe (Crane & Payne, 2011). Treatment providers for these claims included medical doctors (MDs), master's nurses, marriage and family therapists (MFTs), professional counselors, social workers (MSWs), and clinical psychologists. No identifiable health information was provided for any patients in the data set (Crane & Payne, 2011). Participants represented all regions of the United States.

Participants included 1,137 patients diagnosed with anorexia nervosa, with an age range from 6 to 62 ( $M = 22.72$ ,  $SD = 10.4$ ), 1,869 patients diagnosed with bulimia nervosa, with an age range from 9 to 67 ( $M = 25.9$ ,  $SD = 9.9$ ), and 2,439 patients diagnosed with EDNOS, with an age range from 2 to 71 ( $M = 30.85$ ,  $SD = 14.04$ ). Nearly 93% (92.8%;  $n = 5,054$ ) of participants were female, and 7.1% ( $n = 387$ ) were male. Ages ranged from 2 to 71 ( $M = 27.47$ ,  $SD = 12.46$ ). Following the Centers for Disease Control and Prevention (CDC) age groupings (CDC, 2006), participants were classified into the following 6 groups: under 15, 15–24, 25–34, 35–44, 45–54, 55+ (participants in the 55–64, 65–74, and 75+ group were combined, as there were only nine individuals over age 65).

## Measures

*Total cost.* The total cost of treatment is the dollar amount paid by Cigna to the treatment provider for all therapy services for one patient.

*Treatment type.* Family therapy in this study is defined by Current Procedural Terminology (CPT) code 90846 as conjoint psychotherapy with patient present (American Medical Association [AMA], 2006). Individual therapy is defined by the CPT code 90806 as an insight oriented, behavior modifying, and/or supportive treatment in an office or outpatient facility, approximately 45 to 50 minutes face-to-face with the patient (AMA, 2006). Mixed therapy is defined as an episode of care (EoC) that included both family and individual therapy.

*Return to care.* Return to care is defined as a patient returning to therapy for a second (or additional) episode of care with the same provider type and diagnosis (Crane & Payne, 2011).

*Episode of care (EOC).* Episodes of care are defined by Cigna as a series of continuous services for the same patient. An episode of care ends 90 days after psychotherapy claims end (Crane & Payne, 2011).

*Dropout.* Dropouts are defined as a patient attending only one session of therapy in the first EoC.

## RESULTS

## Research Question 1

Research question one assessed the treatment length (number of sessions) and total cost of eating disorder treatment by age using an ANOVA. Total cost and treatment length were both log-transformed to adjust for positive skew in the data. Analysis of log transformed total sessions revealed significant differences by age group,  $F(5, 5439) = 10.275, p < .001$ . Tukey post-hoc comparisons of the six age groups indicate that the individuals ages 55 and older had substantially shorter treatment duration than did any other age group ( $p < .001$  for age groups under 45,  $p = .003$  for individuals ages 44–55). Treatment for individuals age 44–55 was also significantly shorter than for individuals ages 15–24 ( $p = .011$ ). Treatment length by age is displayed in Table 1.

Analysis of log transformed total cost revealed significant differences by age group,  $F(5, 5439) = 9.597, p < .001$ . Tukey post-hoc comparisons of the six age groups indicate that the individuals ages 55 and older had substantially lower costs of treatment than did any other age group ( $p < .001$  for age groups under 45,  $p = .020$  for individuals ages 44–55). Individuals ages 44–55 had significantly lower costs than did individuals ages 15–24 ( $p = .006$ ). These results are displayed in Table 2.

An ANOVA was then used to assess the costs of eating disorder treatment by age within each eating disorder diagnosis individually. Among participants diagnosed with anorexia, no significant differences were found in log-transformed total dollars spent by age,  $F(5, 1131) = .867, p = .503$ .

Among participants diagnosed with EDNOS, there were significant differences in log-transformed total cost among individuals with EDNOS by age,  $F(5, 2433) = 8.726, p < .001$ . Tukey post-hoc comparisons indicate that individuals age 55+ have significantly lower treatment costs than do individuals in any other age group ( $p < .001$  for age groups under 25,  $p = .001$  for individuals 25–34,  $p = .009$  for individuals ages 35–44, and  $p = .043$  for individuals ages 44–55). Individuals ages 15–24 had substantially higher treatment costs than individuals ages 35–44 ( $p = .008$ ), or 45–54 ( $p = .007$ ).

**TABLE 1** Treatment Length (Number of Sessions) by Age

Age	Mean	SD
<15	6.53	2.93
15–24	6.73	2.95
25–34	6.39	3.14
35–44	6.41	3.52
45–54	5.52	3.24
55+	3.86	3.26

**TABLE 2** Costs by Age and Diagnosis

Age	Mean	SD
All diagnoses		
<15	326.69	3.25
15–24	329.90	3.23
25–34	295.45	3.38
35–44	304.66	3.79
45–54	264.15	3.33
55+	190.64	3.59
Anorexia		
<15	391.86	3.49
15–24	414.18	3.37
25–34	369.08	3.42
35–44	456.00	3.63
45–54	319.45	3.44
55+	474.47	6.82
EDNOS		
<15	282.68	3.07
15–24	306.65	3.20
25–34	256.24	3.39
35–44	239.68	3.67
45–54	231.23	3.31
55+	165.11	3.18
Bulimia		
<15	318.49	3.02
15–24	301.90	3.10
25–34	319.39	3.31
35–44	391.27	3.77
45–54	394.65	3.28
55+	332.29	4.16

Among individuals diagnosed with bulimia nervosa, there was a significant difference in log-transformed total dollars spent by age,  $F(5, 1868) = 2.463$ ,  $p = .031$ . Post-hoc analysis revealed that the individuals ages 15–24 had significantly lower costs than individuals ages 35–44 ( $p = .021$ ).

## Research Question 2

Research question two assessed differences by age in the modality of treatment received. A chi square analysis was conducted to predict treatment modality by age as a categorical variable. As can be seen by the frequencies cross tabulated in Table 3, a significant relationship was found between treatment modality and age,  $\chi^2(10, N = 5445) = 284.227$ ,  $p < .001$ . Though a majority of participants across all groups received individual therapy (80.10% total), participants under 15 were less likely than expected to receive individual therapy and more likely than expected to receive both family and mixed therapy. Participants ages 15–24 were more likely than expected to receive mixed therapy, while participants ages 25–34, 35–44, 45–54, 55+ were less likely than expected to receive mixed therapy.



**TABLE 3** Cross-Tabulation of Treatment Modality by Age Group

Age	Modality			Total
	Individual	Family	Mixed	
Under 15	286	50	173	509
15–24	1769	100	404	2273
25–34	1032	58	106	1196
35–44	703	33	90	826
45–54	386	18	37	441
55+	183	10	7	200
Total	4359	269	817	5445

### Research Question 3

Research question three assessed return to care and dropout by age. A chi-square analysis was used to assess differences in return to care rates by age as a categorical variable. A significant relationship was found between return to care rates and age,  $\chi^2(5, N = 5445) = 24.125, p < .001$ . Individuals under age 15 had the highest return to care rates (34.18%), followed by individuals ages 35–44 (31.84%), followed by individuals ages 45–54 (30.39%), individuals ages 15–24 (27.89%) and individuals ages 25–34 (26.42%). Individuals aged 55 and higher had the lowest return to care rates (19.50%).

A chi-square analysis was also used to assess differences in dropout rates by age as a categorical variable. A significant relationship was found between dropout rates and age,  $\chi^2(5, N = 5445) = 80.783, p < .001$ . Individuals ages 55+ had the highest dropout rates (28.00%), individuals ages 35–44 (17.92%), followed by individuals 45–54 (17.69%), individuals ages 25–34 (13.88%), and individuals ages 15–24 (10.38%). Individuals under age 15 had the lowest dropout rates (10.02%).

## DISCUSSION

This study aimed to identify patterns in treatment use and cost by age, in order to facilitate more effective treatments and inform clinicians of relevant treatment precautions. The first research question assessed the cost and treatment length of treatment by age.

Treatments were generally more expensive in younger individuals, which was contrary to our hypothesis. Treatment for individuals older than 55 was substantially less expensive across all diagnoses and particularly for individuals with EDNOS. It may be that treatment for younger people with this diagnosis is more intensive, or that older individuals drop out sooner. However, for individuals with bulimia nervosa, treatment was least expensive for individuals 15–24. This indicates a strong distinction between individuals

with EDNOS and individuals with bulimia nervosa. Future research should assess contributing factors to the differences in cost by age across diagnosis. In one of the few other studies of treatment use by age, treatment length (and likely associated costs) interacted with age only for those with anorexia, and not for the other eating disorder diagnoses (Striegel-Moore et al., 2008). In Striegel-Moore et al.'s study (2008), individuals with anorexia nervosa older than 35 had more mental health visits than individuals 25–34, and likely higher associated costs. However, there was a very small sample size ( $n = 7$ ) of individuals with anorexia nervosa older than 35 (Striegel-Moore et al., 2008).

Across all diagnoses and ages, average treatment length ranged from 3.86 to 6.73 sessions. We note that this is substantially shorter than most clinical guidelines (Murphy et al., 2010; NICE, 2004). These estimates across ages appear to be consistent with the range of 4.7 to 18.1 annual visits reported in past studies of private insurance claims among adults (Striegel-Moore et al., 2008) and across all ages up to 55 (Striegel-Moore & Leslie, 2000).

The second research question assessed differences in modality by age. Participants under 15 were less likely than expected to receive individual therapy and more likely to receive family or mixed therapy, while participants ages 15–24 were more likely than expected to receive mixed therapy, and participants older than 25 were also less likely than expected to receive mixed therapy. These results support our hypothesis. Since family therapy is recommended for adolescents, it is not surprising that the youngest participants were more likely to receive family therapy or a combination of family and mixed therapy. Given the strong support for family therapy in this age group, it is surprising that so few adolescents were receiving family therapy. Less than half of all adolescents (44%) received any family therapy (alone or in combination with individual therapy).

Finally, the third research question assessed return to care and dropout by age. There were significant differences in return to care rates by age. Individuals under age 15 had the highest return to care rates (34.18%), followed by individuals ages 35–44 (31.84%), followed by individuals ages 45–54 (30.39%), individuals ages 15–24 (27.89%), and individuals 25–34 (26.42%). Individuals aged 45 and higher had the lowest return to care rates (19.50%). It may be that older individuals require shorter stays of treatment or fewer episodes of care. Alternatively, since older individuals are more likely to refuse treatment, it may be that they refuse to return to treatment even if another episode of care could be helpful. The youngest individuals may be under more family pressure to receive treatment, and may be more responsive to this pressure.

There were also significant differences in dropout rates by age. Individuals ages 55 and higher had the highest dropout rates (28.00%), followed by individuals ages 35–44 (17.92%), ages 45–54 (17.69%), ages

25–34 (13.88%) and ages 15–42 (10.38%). Individuals ages 15 and under had the lowest dropout rates (10.02%). These findings support our hypothesis. Since older individuals are more likely to refuse treatment, they may be more likely to refuse to return after a first session. Adolescents and youth are more likely to have their treatment organized and potentially enforced by their family, and may be more likely to respond to their family's pressure.

### Limitations

One major limitation of this study is that the data exclude additional relevant costs, services, and symptom data. The data included only outpatient treatment, which excludes inpatient or residential costs. Additionally, this cost includes only direct costs paid by the insurance company. Additional costs may have been paid by the individuals, and these are excluded from the present analysis.

Another limitation is that the only providers studied were mental health professionals. There are a number of other professional groups who are important in the treatment of eating disorders, notably dietitians. The absence of data from these professionals in the current data set leaves out a vital part of effective treatment. This study likely underestimates the cost of care for eating disorders, as it does not include these service providers. It also includes only outpatient treatment from one provider type. Since eating disorder treatment often includes both mental and physical health management, treatment could include multiple provider types.

Additionally, no information was available on reason for termination, which could have significant implications for this study. In this study, all analyses were drawn from information in Cigna utilization data, and it was not possible to examine symptom alleviation outcomes of therapy. This study assumes that shorter length of treatment and fewer episodes of care reflect symptom alleviation. However, it is also possible that the participant found treatment ineffective and ended treatment or changed treatment type.

This lack of symptom information also affects the measurement of dropout and return to care. We define dropout as terminating after one session in order to have a highly sensitive definition. However, clients who dropped out of treatment after more than one session, despite ongoing significant symptoms, are not captured in our definition of dropout. It is possible that older individuals terminated early, leading to lower cost, but this might lead to later costs in increased medical expenses, lowered productivity, or increased absenteeism. We define return to care as returning for services with the same provider type and with the same diagnosis. This would exclude individuals who received a diagnosis of another eating disorder upon their return to treatment.

## Clinical Implications

This study found that a majority of adolescents with eating disorders are not receiving family therapy treatment, despite its validated effectiveness among this demographic. Clinicians should be sure to discuss its importance with families of adolescents, and to incorporate it into treatment when possible. Additionally, as clinicians initiate services with older individuals with eating disorders, they must be mindful that these individuals have high dropout rates. It is therefore particularly important that clinicians communicate and address potential barriers to ongoing treatment with family members. Finally, the average length of treatment is substantially shorter than currently recommended treatments. If clients do not attend treatment long enough to receive the recommended length of treatment, clinicians and researchers should explore how to deliver effective treatment in shorter doses.

## Directions for Future Research

Within the limitations of the data set, there was no information about symptom severity or alleviation over the course of treatment. Future studies should assess not only the costs associated with the delivery of therapy, but also the benefits associated with decreased symptoms and/or improved quality of life. Symptom information could more completely identify the impact of age on the course and success of treatment.

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