



Does attrition during follow-up bias outcome data in studies of eating disorders?

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ABSTRACT

Attrition is a pervasive problem in eating disorders research. This study examined whether those who do and do not respond to follow-up assessments differ before or during treatment. Participants ($N = 268$) receiving residential eating disorders treatment were categorized according to those who did ("responders," $n = 152$) and did not ("non-responders," $n = 116$) complete a one-month follow-up assessment. Among participants diagnosed with bulimia nervosa ($n = 136$), responders exhibited significantly higher scores than non-responders at intake on restraint, weight concern, eating concerns, body dissatisfaction, drive for thinness, and depressive symptoms, and had significantly less improvement in eating concerns during treatment. Among participants with anorexia nervosa ($n = 132$), there were no significant differences between responders and non-responders at intake or in treatment improvement. Research on bulimia nervosa treatment based on responders to follow-up assessments may underestimate the amount of improvement that patients experience.

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The assessment of eating disorder patients after they are discharged from inpatient or residential care is important in determining whether treatment gains are maintained. Several studies have examined eating disorder patients at follow-up after being discharged from inpatient treatment (Engel & Wilfarth, 1988; Gleaves, Post, Eberenz, & Davis, 1993; Lowe, Davis, Annunziato, & Lucks, 2003; Probst, Vandereycken, Van Coppenolle, & Pieters, 1999; Williamson et al., 1989). For example, Lowe et al. (2003) assessed inpatients diagnosed with anorexia nervosa and bulimia nervosa at 3-month follow up and found that although there was a modest relapse toward pretreatment symptom levels, the treatment gains in eating disorder, depressive, and anxiety symptoms were largely maintained. In addition, Probst et al. (1999) found that disordered eating attitudes and behaviors were significantly improved from intake to 6- and 12-month follow up among a sample of inpatients diagnosed with anorexia nervosa and bulimia nervosa. Engel and Wilfarth (1988) found that in patients with anorexia nervosa, weight gain and improvements from pre- to post-treatment in measures of anxiety, obsessions, depression, and disordered eating attitudes remained stable at a 2-year follow-up. In contrast, Williamson et al. (1989) noted a trend towards relapse at 6-month follow-up among a sample of inpatients diagnosed with bulimia nervosa on disordered eating behaviors and attitudes as well as depressive and anxiety symptoms. Similarly, Gleaves et al. (1993) assessed inpatients diagnosed with bulimia nervosa at 1- to 3-year follow-ups and found that across all

follow-up periods, 39% of patients continued to binge and purge frequently enough to meet diagnostic criteria for bulimia nervosa.

Two papers reviewing follow-up assessment of patients after undergoing eating disorder treatment reported a high degree of variability in attrition among participants across multiple studies. In these two reviews, response rates ranged from 62–100% (Pike, 1998) and 33–100% (Steinhausen, 2002). The lack of participation in follow-up assessments among eating disorder patients can cause serious bias in outcome research (Bjork, Clinton, & Norring, 2006), as some researchers assume that patients who fail to respond exhibit greater levels of psychopathology than those who do respond (Hsu, 1980; Pike, 1998; Probst et al., 1999). Further, as Blouin et al. (1995) discuss, external validity may often be compromised by significant attrition at follow-up assessments, as results are assumed to represent only those patients who remain in a study. More importantly, non-participation in follow-up assessments may cause researchers to overestimate treatment effects if those who respond to follow-up assessments experienced more improvement in treatment than those who do not respond (Bjork et al., 2006).

Despite evidence that there is often a substantial loss of respondents at follow-up (Lowe et al., 2003), few studies have directly examined whether responders and non-responders differ on variables assessed before or during eating disorder treatment. Furthermore, among the data that do exist, results are inconsistent regarding whether patients who do and do not respond to follow-up assessments tend to systematically differ. Vandereycken and Pierloot (1983) found that dropouts from a retrospective study were older at admission, had a longer duration of illness, and a higher percentage of

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weight loss than patients who responded to follow-up. Similarly, Hsu (1980) found that only 39% of the non-responders were of normal weight compared to 69% of the patients who responded to a personal interview at follow-up.

Other studies have found that patients who do and do not respond to follow-up assessments tend not to systematically differ. Lowe et al. (2003) found that, among their sample of inpatients who met Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (American Psychiatric Association, 2000) criteria for anorexia nervosa restricting type, anorexia nervosa binge/purge subtype, or bulimia nervosa. Responders and non-responders at a 3-month follow-up did not differ with regard to their intake levels of depressive and disordered eating symptoms. Similarly, Probst et al. (1999) found no differences between these groups within another group of inpatients who met Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (American Psychiatric Association, 2000) criteria for anorexia nervosa restricting type, anorexia nervosa binge/purge subtype, or bulimia nervosa at 6-month or 1-year follow-ups with regard to their disordered eating behaviors and negative body experience assessed at admission. A third study examined child and adolescent eating disordered inpatients diagnosed with anorexia nervosa restrictive type, anorexia nervosa bulimic type, and bulimia nervosa in accordance with ICD-10 criteria at a mean of 5 and 11.5 year follow-ups and found that there were no significant differences between responders and non-responders with regard to intake diagnostic criteria and symptoms, as well as several other variables including personal and family history of eating disorders and total amount of hospitalization after initial in-patient treatment (Steinhausen, Seidel, & Winkler, 2000). Finally, although explicit data were not presented in his paper, Steinhausen (2002) noted in his review that an analysis of the one-hundred and nineteen studies that were examined, there was an inconsistent pattern, with no evidence that studies that had high drop-out rates at follow-up had better results because patients who fared worse did not participate in the assessments.

A more recent study was conducted explicitly to assess whether there are differences in responder and non-responders at follow-up assessments among eating disorder patients (Bjork et al., 2006). Using a sample of participants who received inpatient, day, or outpatient treatment, these investigators assessed a variety of dimensions at intake and 36-month follow-up after classifying them with regard to their responder status (Bjork et al., 2006). Sixty percent of patients participated in the 36-month follow-up. Non-participants were classified as either active (i.e., refused participation or failed to attend scheduled appointments) or passive non-participants (i.e., could not be traced). Active non-participants exhibited lower levels of obsession-compulsion, anxiety, and asceticism at intake when compared to passive responders and responders. The healthier status of non-participants at intake questions the assumption that non-responders fare worse at follow-up. It poses the possibility that non-responders fail to complete follow-up assessments for reasons other than an increased severity of symptoms.

Taken together, it is unclear whether non-responders to follow-up assessments experience more comorbidity or more severe psychopathology. In addition, none of the studies reviewed examined the degree of change during treatment to test the presumption that non-responders improve less than responders over the course of treatment. Assessment of whether the degree of improvement differs between non-responders and responders is important, as individuals who believe that they have not improved as much during treatment might be less inclined to participate in follow-up assessments. Length of follow-up must also be considered when interpreting follow-up data. Existing studies examined responders and non-responders at follow-ups ranging from 3 months to more than 20 years following treatment. As the duration of the follow-ups grows, it becomes more likely that responder status (both willingness to participate and

scores obtained) reflects inter-current events between treatment termination and the follow-up. The follow-up analysis described in this report was conducted just one month following discharge from inpatient treatment, so the outcome of our analyses were less likely than past analyses to be affected by changes in patient functioning since leaving treatment. Finally, because of a variety of practical and clinical issues, rates of participation in follow-up studies of community-based treatments (generally in the 30–70% range) tend to be significantly lower than those from randomized controlled trials (where such rates are usually greater than 70%). The majority of individuals with eating disorders do not receive treatment from clinical research centers, so it is important to examine the potential bias in data collected from freestanding centers. Thus, the participants in this study were recruited from a clinical setting, which differs from randomized controlled trials that employ strict diagnostic criteria to assess treatment outcome response. Nevertheless, it is important to determine whether there is any sort of response bias in this clinically relevant, real-world treatment setting. The aim of this study was to find out whether eating disorder patients who did and did not participate in a one-month follow-up assessment differed with regard to severity of symptoms at intake or degree of symptom improvement during treatment.

1. Method

1.1. Participants

Participants were 268 women who were admitted to a private residential treatment facility that focuses on the treatment of eating disorders. All patients met the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (American Psychiatric Association, 2000) criteria for anorexia nervosa restricting type, anorexia nervosa binge/purge subtype, or bulimia nervosa. This diagnosis was made by a psychiatrist after the patient was admitted. The distribution of diagnoses in this sample at intake was as follows: 29.1% anorexia nervosa, restricting subtype; 20.1% anorexia nervosa, binge/purge subtype; and 50.8% bulimia nervosa.

1.2. Measures

1.2.1. Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996)

The BDI-II is a 21-item self-report inventory widely used in research on depression. It is a self-report scale consisting of 21 items scored from 0 to 3 with a range of 0 to 63. Higher scores represent greater levels of depressive symptoms. A meta-analysis found that across studies over 25 years, the BDI demonstrated high internal consistency, high construct validity, good test-re-test reliability, and high convergent validity with other measures of depression (Beck, Steer, & Garbin, 1988). Internal and test-retest reliabilities are good in both clinical and nonclinical samples (Beck et al., 1988). Good validity for the BDI-II has also been established (Beck, Steer, & Brown, 1996). For the current study, BDI-II item #9, which assesses suicidality, was omitted at discharge and follow-up for liability reasons. An alpha coefficient of .93 was obtained in the current study.

1.2.2. The Eating Disorders Inventory-3rd Edition (EDI-3; Garner, 2004)

This 96-item self-report inventory measures eating disorder symptom severity along with psychological dimensions associated with eating disorders. The EDI-3 is organized into 12 primary scales; however the current study included only the Drive for Thinness, Body Dissatisfaction, and Bulimia subscales (Garner, 2004). The scale has adequate psychometric properties (Garner, Olmsted, & Polivy, 1983). For example, the test-retest reliability of these subscales among women diagnosed with eating disorders has been excellent (Cumella, 2006). All EDI items are able to discriminate eating disorder and nonpatient samples (Garner et al., 1983). Alpha coefficients of .88, .92,

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