REGULAR ARTICLE

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Aftercare Intervention Through Text Messaging in the Treatment of Bulimia Nervosa—Feasibility Pilot

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ABSTRACT

Objective: Even with the best available treatment, most bulimia nervosa (BN) sufferers are not symptom free at the end of therapy and, for those who have achieved remission, risk of relapse is high. Thus, there is a need for aftercare or relapse prevention interventions after therapy. It is not yet known what type of intervention should be delivered, and how to suit patient needs while being mindful of cost and time constraints of service providers. This pilot study was conducted to explore the feasibility, acceptability, and efficacy of a text messaging (short messaging service [SMS])-based intervention in the aftercare of BN patients who had received outpatient psychotherapy.

Method: A total of 21 patients with BN participated in the 6-month SMS-based intervention as a step-down treatment AFTER outpatient therapy.

Results: Levels of use of the program were relatively low and attrition high, indicating limited acceptance of the intervention.

Conclusion: This study suggests that the SMS-based intervention would benefit from further adaptation to make it a more useful tool for the aftercare of patients after outpatient treatment for bulimia nervosa. © 2006 by Wiley Periodicals, Inc.

Keywords: bulimia nervosa; aftercare; stepped care; short message service; text messaging

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Introduction

Even with the best available treatment, a substantial number of bulimia nervosa (BN) sufferers are not symptom free at the end of therapy.[1] Those who do achieve remission are at risk of relapse, with relapse rates ranging from 21% to 55% within the first 1–2.5 years after treatment.[2–4] Very few studies have so far addressed the question of how best to provide aftercare for patients with BN.

New technologies may be able to bridge this gap. In the United Kingdom, the number of mobile phones in circulation exceeds its population size, and 70% of the 53 million United Kingdom subscribers registered as active users in September 2004 sent text messages.[5] In addition to its increasing popularity, messaging (i.e., with the short message system [SMS]) has the advantages of visual anonymity, asynchronous communication, and flexibility of location. Text message interventions have been piloted with encouraging results in the management of diabetes mellitus,[6] hypertension,[7] asthma,[8] and smoking cessation.[9]

We wanted to know whether text interventions might be of use in the management of BN, too. The objective of the present study was to conduct a pilot evaluation of a semi-automatized SMS program in the aftercare of patients who had received treatment for BN. The English version of this program was developed in collaboration with the Centre of Psychotherapy Research in Heidelberg. A pilot study in 35 BN patients after inpatient treatment in Germany suggested that the intervention is well accepted.[10] The program drew from research into interventions that have used feedback to change problematic health behaviors.[11] We present findings after the use of the program in patients who had received outpatient therapy at a large specialist eating disorder service in the United Kingdom. Typically this was 10–20 sessions of guided self-help, cognitive behavior therapy, or cognitive analytical therapy, depending on clinical need and therapist availability.

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Method and Design

Sample

Eligible patients had a DSM-IV diagnosis of BN or Eating Disorder Not Otherwise Specified (EDNOS) and had completed treatment (see above). EDNOS patients included people with bulimic disorders who had a body mass index (BMI) of >17.5 kg/m^2. Exclusion criteria included lack of a mobile phone, acute suicidality, psychosis, and needing further intense treatment for their eating disorder.

Research ethics approval was obtained from the Institute of Psychiatry Research Ethics Committee.

Intervention

At the end of treatment with their therapist, eligible patients were offered the SMS program as a "step-down" treatment. Patients were provided with an information sheet, a consent form, program instructions, and an initial questionnaire to complete and return to the research worker (SP, SR, and NH). On receipt of the questionnaire and consent form, the intervention was initiated, and participants received their first text.

The intervention was designed to take place over a 6-month period after outpatient therapy. Participants were asked to send a weekly message, in a standardized format, answering five questions regarding their bulimic symptomatology and mood states. They were also given the opportunity to send unprompted text messages about their progress at any time during the program.

The communication platform was an Internet-based, semi-automatized computer program, developed by the Centre for Psychotherapy Research, Heidelberg. The prompted answers were transformed dichotomously to a functional/nonfunctional range by the software program and the outcome related to the previous status report of the patient. Details of the algorithm used, and on the development of the program, have been described elsewhere.[12] This information was used to generate a preprogrammed, personally tailored feedback message (e.g., "Try distracting yourself from troublesome thoughts about your weight/appearance by meeting with people you like and going out together"). The pool of existing messages were translated from German into English and changed into more informal text language. Additional messages were developed to increase the pool of messages. A researcher checked the automated response for plausibility, and to prevent repetition. The responses aimed to educate participants about changes in their symptom status, provide advice, and demonstrate concern and support for the patient. Messages were answered once a week. In addition, patients were sent monthly postal feedback on the course of their symptoms.

Measures

Both pretreatment and posttreatment, all participants received a short questionnaire (i.e., Short Evaluation of Eating Disorders [SEED]),[13] which measures eating disorder symptoms. After the program, participants were asked to complete a questionnaire exploring their views of the intervention.

Results

Data Analysis

SEED data pre- and post-intervention were analyzed using SPSS-11 for Windows, employing Wilcoxon signed-ranks test. Responses to the unstructured questions were deconstructed by a researcher to identify key themes. These themes were compared across responses and were sorted into meaningful categories. Frequency counts were made of the major themes.

Participants

A total of 34 patients who had undergone outpatient ($n = 33$) or day patient treatment ($n = 1$) at the South London and Maudsley Eating Disorder services were offered participation in the SMS program. Of these, 21 (62%) took up the program. Participants were predominantly female (95.3%, 20/21) and aged 19–48 years, with a median age of 26 years. The median BMI of the sample at the start of the intervention was 22.4 kg/m^2 and ranged from 17.8 kg/m^2 to 43.1 kg/m^2. The duration of illness ranged from <2 years to >20 years, with a median length of illness of 5–10 years. The sample had attended a median of 14.5 outpatient therapy sessions, ranging from 3 sessions to 28.

Those who took up the study did not differ significantly from those who declined in terms of age, sex, and number of outpatient sessions received.

Uptake and Utilization of Intervention

Participants rated their motivation to take part on a scale ranging from 0 (not motivated) to 4 (very motivated). The median motivation score was 3 and ranged from 2 to 4 ($n = 14$). The median duration of participation was 3 months and ranged from 1 to 6 months. The number of patients remaining in the program was 21, 15, 11, 10, 10, and 9 through months 1– 6, respectively. Of the six participants who dropped out within the first month, four provided an explanation as to why they did not use the program. One patient repeatedly lost the text instructions, another felt she was managing well with support from friends, the third

had started university and had other matters to deal with, and the fourth had left the country and would have found it more costly to engage in text messaging. The nine participants who remained in the program for six months did not respond weekly as suggested in the instructions. Completers sent a median of 13 texts, ranging from 3 to 23, during a possible 26 weeks.

There were no significant differences between the patients who dropped out or completed the intervention in terms of age, ethnicity, BMI, duration of illness, number of outpatient sessions, or motivation to take part.

Acceptability

After the intervention, participants completed a questionnaire exploring their views of the program. Patients were asked to rate the quality of the program on a scale of 1–4 (1 = excellent, 2 = good, 3 = poor, 4 = very poor). The median response was 2 (range, 1–4). However, 50% (7/14) said they would "probably not" participate again and 35.71% (5/14) felt they would "definitely not" [1–4 scale: 1 = definitely yes, 2 = probably yes, 3 = probably not, 4 = definitely not; median 3 (range, 2–4)]. Moreover, 60% (9/14) participants felt that they would "probably not" recommend the program to a friend with similar problems and 26.67% (4/14) would "definitely not" [rated on a similar 1–4 scale; median 3 (range, 1–4)]. The messages were judged to be "moderately appropriate" [1–4 scale: 1 = very appropriate, 2 = moderately appropriate, 3 = less appropriate, 4 = very inappropriate; median 2 (range, 1–3)] and it was agreed that little effort was required to participate in the program [1–4 scale: 1 = very major effort, 2 = major effort, 3 = minor effort, 4 = very minor effort; median 3 (range, 2–4)].

In this study, 53.3% (8/15) of patients viewed the lack of personal contact negatively, while the remainder (46.7%; 7/15) did not mind the lack of contact. 62.5% (5/8) of participants who completed the 6-month program and answered the questionnaire were satisfied with its length, while 25% (2/8) felt that it was "too short." Only one patient (12.5%) felt that 6 months was "too long" for the intervention. **Table 1** shows participants' qualitative comments on different aspects of the program.

Efficacy

The text response rate of most participants was low and infrequent which prevented us from measuring symptoms longitudinally over multiple time points and to establish relapse rates. At the end of the program, all patients were contacted to conduct the SEED and "views on treatment" questionnaire. Pre-intervention and post-intervention SEED scores were available for 16 of 21 patients (see **Table 2**). The percentage of patients who were clinical or subclinical, as well as abstinent pretext and posttext intervention, was also calculated from the SEED. Patients were classed as subclinical if they had binged and vomited less than twice a week in the previous month and abstinent if they had been binge and vomit free over the previous month. Preintervention, 9.5% (2/21) of patients were abstinent, 52.4% (11/21) were clinical, and 38.10% (8/21) were subclinical. Posttreatment, 29.4% (5/17) of patients were rated as abstinent, 52.9% (9/17) as clinical, and 17.7% (3/17) as subclinical.

Responses to the "views on treatment" questionnaire showed that 69.2% (9/13) of participants rated the program as having been "somewhat helpful," whereas 30.8% (4/13) said that it had not helped them. Also, 76.9% (10/13) thought that they would have coped equally well without the aftercare, 15.4% (2/13) felt that they would have faired worse without the help, and one person (7.7 %) believed that she would have coped "a little better" without the intervention.

Conclusion

The present study aimed to assess the acceptability, efficacy, and feasibility of an SMS program in the aftercare of patients who had completed outpatient treatment for bulimia nervosa. This study paralleled work conducted by the Centre for Psychotherapy in Heidelberg, where the intervention has been piloted in patients who have completed inpatient treatment for BN.[12] In contrast to our study, the work carried out in Germany found much higher acceptability of the program (e.g., approximately 80% said that they would be willing to participate again) and provided preliminary information to suggest that the program prevented relapse.

In our study, the participants' low response rate and answers to the "views" questionnaire suggest that the intervention was only moderately well accepted by participants. However, at least a subgroup of participants felt supported and encouraged by the feedback messages. The small sample size precludes identification of patient characteristics that might be related to the acceptance of the program. Bulimic symptoms measured on the SEED, a self-report questionnaire, showed no significant symptom change either per-intervention or post-intervention. Although this finding may indicate that the intervention helped patients to

TABLE 1. Participants' comments about the "Texting in bulimia nervosa" program

Positive	Negative
Personal contact	
Good as don't always feel like talking (06) Liked lack of contact (10) In some ways easier when not face to face (12) Could express feelings without talking to stranger (15)	Would have liked more personal contact with someone. Made me feel alone (02) A 1-1 after 3 months would be useful I.e. on phone (03) More personal contact would have been more helpful (07) Odd phone call would be good (12)
Support	
It was nice to know that someone was monitoring my feelings (03) I liked that even if I didn't send a text I still got one, so you know they are thinking of you (06) It kept you aware that someone out there cares (08) Felt someone was out there and thinking about me (12) Interest. . .at unexpected times (14) I found it helpful to feel someone was asking about my eating habits weekly (16) I was grateful for the offer of help (20)	Made me feel alone (02)
Reminders	
. . .Weekly text reminds you [to focus] (08) Got text at right time and got me to think. . . Some I kept on the phone and would go through and read again (10) Good-got reminders. . .reminder to keep on track (12) Words of encouragement at unexpected times (14) I found it useful that some would ask about my eating habits weekly (16) The weekly reminders made me feel as if people were serious about the program (18)	Text messages are usually from friends so when I was contacted by yourselves I felt that therapy was invading my life (20)
The Design	
The nature of texting is important. Happy that I got after therapy (02) The idea is good but the comments need to be more constructive (03) Not everyone can talk to their friends so text study good (09) I really liked that there was a number I could text about my thoughts and feelings and problems about eating (18)	Wanted more options in the text answers, not interested in sending figures (02) The questions were too vague to give proper answers (03) Too formal, too computerised (07) Lost stuff [instructions to text] so couldn't text back. . .Maybe email as an option. I definitely would be able to do that. (08) Difficult to meet needs with these texts (10) Text is a constricted method of communication; would have been good to have a website you could go to, email would be better- less restricted, more personal, would prefer email to text (17) I don't think messages can ever help as it is not possible to write much in them. Also text messages are usually from friends (20)
The Answers	
Get texted back when low and get encouraging texts. When feeling negative the things said were a rational voice in your mind-so good (06) If you are doing well you congratulate yourself, if not remind yourself to try (08) Helpful on occasions and did come at times when I needed it 90% of time. Couple that really made me think, times when it was "try to do a certain thing" (10) Nice to have bits of encouragement. . .Messages quite upsetting at times as so spot on (12) Words of encouragement at unexpected times (14) The personal responses (occasional) were encouraging and in the past had helped me get on track, and tips were helpful. (18) When I was having a bad week, I felt the texts were encouraging and made me feel better and more hopeful about the next week. When I was doing well the texts reminded me of how far I've come and made me feel proud of that (21)	Wanted more personal response (02) The idea is good but the comments need to be more constructive. The texts were not encouraging they stated the obvious and did not offer support. (03) Wanted to text a problem and feel I could get a personal answer back. (07) Not personalised; seemed like a routine programme. The hope u r ok messages seemed patronising (17) No personal response and sometimes felt text had not been read (18). The ones used were very patronising.. . .It is a way of life for me so telling me to go for a walk or that I shouldn't think about weight so much is a little pointless as I already know this (20)
Technical Difficulties	
The responses didn't always coincide with my answers (03) Sometimes I didn't receive answers promptly when I'd sent one. Sometimes I got repeat messages. (06) Technical difficulties on questions (07) Moved house and lost the information to text (08) Never really felt as if my text had been read. Also didn't know if I'd get a reply-at difficult times it would help to get a prompt reply (18)	

TABLE 1. Continued

Reasons For Low Uptake/Response
Went to Uni so had lots of other things to deal with so stopped doing programme (01)
Good to do, but each time going through a bad patch couldn't face doing it. (06)
Programme quite tricky, people around being nosey when wanted privacy (07)
Moved house and lost information; got annoyed with self-lost stuff so couldn't text back. . .somehow text questions to people ahead of time (08)
Didn't use programme, felt really good after treatment, forgot about it, didn't want contact, away from country for ages, work strange hours- never got round to thinking about it. Friends got me through ED. (09)
The times I did force myself to read the text really helped me to focus. . ..hard to do [texts]. . . I know its only a text but it did take effort-most of the time you don't want to face what your doing (10)
Been quite busy with work and lazy (12)
Unfortunately the last few months have been difficult..And I'll have ignored the text and not replied (16)
There was nothing I didn't like but sometimesI forgot to text in (21)
Suggestions For Improvements
Would have liked more personal contact with someone. . . Wanted more options in the text answers and more personal response (02)
Comments need to be more constructive. A 1-1 after 3 months would be useful (03)
More personal contact would have been helpful. . .Wanted to text my problem and feel I would get a personal response back (07)
Somehow text questions to people ahead of time, maybe email as an option. (08)
Odd phone call would have been good. . .If someone rang once a month (12)
Could personalize texts more. . .Would have been good to have a website you could go to, email would be better, less restricted, would prefer email to text (17)
Could have been improved by being able to text about feelings and thoughts more than answering the standard weekly questions. I think it could be extended to longer than 6 months if the ex-patientdeems helpful (18)
Maybe it could work for people who are just at the beginning of their ED (20)
I think question I should be graded the other way round. The graphs looked like it showed my body image getting worse but it has got better (21)

maintain the changes they had made in outpatient treatment, given the absence of a comparison group, it is impossible to draw any conclusions regarding the efficacy of the program from this sample.

All in all, the patients' somewhat "lukewarm" response to the program suggests that changes need to be made with regards patient selection, program delivery and content before investigating this program further.

In terms of patient selection in our study, the number of outpatient sessions that participants had attended varied greatly, with some having only received brief treatment before starting the program. This finding contrasts with the German study where patients had all undergone a lengthy in-patient program and may therefore have been more prepared to invest time in staying well. We also took all patients who were willing to start the program, irrespective of their degree of symptoms. It might have been more useful to offer the intervention only to those who had responded to therapist-aided treatment. Furthermore, the SMS program is a minimal intervention and probably does not give enough support to patients experiencing severe bulimic symptoms.

A significant proportion of participants were dissatisfied with the lack of personal contact, and there were suggestions to supplement the intervention with phone calls. Some participants found the program "too formal" and "computerized" and the content of the texts "impersonal" or "patronizing." To improve acceptability, service users could play a role in designing the messages, and participants' therapists could be responsible for the answers. In this study, the researchers were not part of the treating team before the intervention and therefore did not have intimate knowledge of the patients. Dissatisfaction with content might have been reduced had feedback responses been more immediate to participant's texts. This could be achieved if the program alerted the researcher when a message had been received. Moreover, had the program been instituted during treatment, acceptability might have been higher because participants would have had time to become familiar with the concept. In the German study, the hospital gave patients an introduction into the program.

Research into feedback suggests that when this is tailored to the actions and beliefs of the individual, it is more effective in changing behavior.[11] The feedback given in our study was personalized, yet it was not as useful to participants as we would have hoped. A stage-matched intervention focused on gauging and enhancing self-efficacy in these "experienced" patients may have been more successful.

There were occasional technical problems, which possibly resulted in the loss of interest expressed by patients. The program would sometimes receive text messages late, so that participants would then receive a message that did not respond to their answer. Despite these "hiccups," the researchers found the program easy to implement and it was maintained at a reasonable cost.

Given the need to provide further support after treatment for BN, and the accessibility and popularity of text messaging, we believe further research exploring the therapeutic potential of SMS is advisable. This should focus on developing a more effec-

TABLE 2. Comparison of participant's results on the SEED Questionnaire before and after the intervention

Seed items	Pre-mean	*SD*	Post-mean	*SD*	Wilcoxon
Afraid of becoming fat 1 = not at all, 2 = sometimes, 3 = at all times, 4 = the thought of gaining weight causes panic, 5 = 1 would rather die than gain weight	2.8 *N* = 21	(0.8)	2.8 *N* = 17	(1.0)	1 *N* = 17
Perception of body shape 1 = much too thin, 2 = thin, 3 = neutral, 4 = overweight, 5 = much too fat	3.8 *N* = 21	(.9)	3.9 *N* = 17	(.9)	0.66 *N* = 17
Perception of attractiveness 1 = attractive, 2 = a little attractive, 3 = neutral, 4 = a little unattractive, 5 = unattractive	3.4 *N* = 21	(1.0)	3.7 *N* = 17	(1.1)	0.32 *N* = 17
Perception of muscle tone 1 = much too muscular, 2 = muscular, 3 = neutral, 4 = flabby, 5 = too flabby	3.8 *N* = 21	(1.7)	4.1 *N* = 17	(1.0)	0.08 *N* = 17
Episodes of vomiting in past 4 weeks 1 = not at all, 2 = up to once a week, 3 = once a week, 4 = twice a week, 5 = daily, 6 = several times a day	3.0 *N* = 21	(1.8)	2.7 *N* = 17	(2.0)	0.86 *N* = 17
Laxative use in past 4 weeks 1 = not at all, 2 = up to once a week, 3 = once a week, 4 = twice a week, 5 = daily, 6 = several times a day	1.4 *N* = 21	(1.3)	1.4 *N* = 17	(1.2)	0.66 *N* = 17
Diet/low cal food in past 4 weeks 1 = not at all, 2 = up to once a week, 3 = once a week, 4 = twice a week, 5 = daily, 6 = several times a day	3.7 *N* = 21	(1.9)	3.5 *N* = 17	(1.8)	0.96 *N* = 17
Excessive exercise in past 4 weeks 1 = not at all, 2 = up to once a week, 3 = once a week, 4 = twice a week, 5 = daily, 6 = several times a day	1.6 *N* = 21	(1.2)	1.5 *N* = 17	(1.2)	0.59 *N* = 17
Binge episodes in past 4 weeks (range, 0–84)	17.8 *N* = 21	(25.2)	23.5 *N* = 17	(31.4)	0.71 *N* = 17

Note: SEED = Short Evaluation of Eating Disorders.

tive way of using text messaging with this client group, and should provide a clearer idea of which patients could benefit from the program.

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