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Special Feature Article

Development of an Internet-based Guided Self-help Cognitive Behavioral Therapy (iGSH-CBT) for Bulimia Nervosa and Binge Eating Disorder in Japanese Clinical Settings

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Abstract

Cognitive behavioral therapy (CBT) for patients with bulimia nervosa (BN) or binge eating disorder (BED) has been shown to be effective. CBT is one of the most evidence-based psychological interventions for BN or BED. And therefore, guidelines for eating disorders (ED) generally recommend CBT for the treatment of BN or BED. However, CBT is not as widely utilized as it should be, as there is a shortage of therapists with the necessary training, and their training and the length of time required for treatment are not economically viable.

Although the prevalence of BN is on the rise, delays in treatment initiation and high treatment dropout rates have been pointed out. It is understood that the earlier the treatment of BN is started, the higher is the rate of improvement. In addition, BN has a high suicide rate. So, prevention of the onset of BN and early initiation of treatment are crucial issues.

The necessity of developing a CBT that is highly practical and acceptable for treatment is clear. Several guidelines recommend guided self-help as a simple, low-cost, and low-intensity treatment method with good therapeutic effects in the treatment of BN and BED.

In addition, an increasing number of studies on Internet-based treatment interventions for mental health problems have been conducted in recent years, suggesting that online interventions may be more cost-effective, convenient, and accessible to more people. Internet-based cognitive behavioral therapy (iCBT) for BN has been examined for its efficiency and its therapeutic effect is eagerly anticipated. The NICE guideline (2017) and several other guidelines recommend the Internet-based guided self-help cognitive behavioral therapy (iGSH-CBT) as a first-line treatment for BN and BED. In this article, we will report evidence as well as the status of the development of iGSH-CBT in Japan.

Keywords: bulimia nervosa, binge eating disorder, guided self-help, Internet-based cognitive behavioral therapy (iCBT)

Introduction

Eating disorders (EDs) are categorized into three primary types in the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)*⁵⁾: anorexia nervosa (AN), bulimia nervosa (BN), and binge-eating disorder (BED). BN is characterized by recurrent binge-eating episodes accompanied by a sense of inability to control eating, compensatory behaviors such as self-induced vomiting, refusing to eat, the abuse of laxatives and other medicines to prevent weight gain, and a self-image excessively influenced by body shape and weight. BED involves episodes of binge eating associated with intense feelings of self-loathing, a depressed mood, significant guilt, and marked distress, but without compensatory behaviors. Despite the recognized need for prevention and

early intervention^{19,29)}, the high number of untreated individuals remains a pressing issue^{9,20)}, underscoring the need to develop practical and widely acceptable treatment approaches.

I. Prevalence of BN and BED

Several epidemiological studies have been conducted both internationally and in Japan to investigate the prevalence of BN and BED, but the reported prevalence varies and is influenced by cultural perceptions of body shape and economic factors.

In 2010, Smink, F.R.E., et al. conducted a cohort study of adolescents in the Netherlands³⁹⁾, finding that 3.7% of 19-year-old women had some form of ED. The point prevalence was reported as 0.6% (95% confidence interval [CI]: 0.2–1.3) for BN and 1.6% (95% CI: 0.9–2.7) for BED.

In a 2012–2013 survey of the general population aged 18 years or older in the United States, Udo, T., et al. examined lifetime and 12-month prevalence rates⁴³). Their findings indicated higher prevalence rates among women compared with men for both BN and BED. The lifetime prevalence of BN was 0.08% (standard error [SE]: 0.03) for men and 0.46% (SE: 0.06) for women. For BED, the lifetime prevalence was 0.42% (SE: 0.06) for men and 1.25% (SE: 0.10) for women.

In Japan, Nakai, Y., et al. studied the point prevalence of BN among female students aged 16 to 23 years in Kyoto Prefecture over time²⁵). Their research revealed that the point prevalence was 0.00% (95% CI: 0.00–0.10) in 1982, 0.45% (95% CI: 0.23–0.66) in 1992, and 2.32% (95% CI: 1.79–2.86) in the 2000s, indicating a rising trend in BN prevalence during this period. However, subsequent surveys, such as one conducted by Ando, T., et al.⁶), reported a stabilization in the number of BN patients after the 2000s. In summary, the prevalence of BN in Japan increased significantly until the early 2000s but has since plateaued.

II. The importance of treating BN and BED patients

In therapy for ED patients, delays in initiating treatment have been shown to adversely affect the prognosis¹⁹).

Specifically for BN, a shorter interval between onset and the start of treatment is associated with better outcomes^{23,30}). However, a systematic review by Austin, A., et al. reported significant delays in treatment initiation, with the duration between symptom onset and treatment averaging 29.9 months for AN, 53.0 months for BN, and 67.4 months for BED, highlighting the existence of prolonged untreated periods⁷).

A review by Keel, P. K., et al. analyzed the improvement rates among BN patients with continued treatment, and found that remission rates increased with extended follow-up durations, reaching 27–28% at 1 year and over 70% at 5–20 years²³). The study also noted that patients who did not achieve remission within 5 years were likely to experience a chronic course of illness²³). Similarly, a review by Steinhausen, H.C., et al. reported the following outcomes for BN: remission in 45% of cases, improvement in 27%, and chronicity in 23%⁴⁰). These findings suggest that prolonged and continuous treatment significantly increases the likelihood of remission.

Although early initiation and sustained treatment are critical for favorable prognoses, barriers such as high medical costs, limited access to care, stigma⁹), and poor patient

insight²⁰) often prevent patients from seeking or continuing treatment.

Additionally, BN is significantly correlated with an elevated risk of suicide. Patients with BN have a 7.5-fold higher standardized mortality ratio (SMR) for suicide compared with the general population¹², and a longer duration of illness is associated with a higher rate of suicide attempts³. One study further reported that the mortality rate due to suicide among individuals with BN was seven times higher than in the general population²⁹. Given this situation, there is an urgent need to develop treatment strategies that ensure early intervention and promote continual care.

III. Cognitive behavioral therapy (CBT) for BN and BED patients

1. Effectiveness of CBT

Several randomized controlled trials (RCT) have been conducted to evaluate the effectiveness of cognitive behavioral therapy (CBT) for BN. These studies have reported that CBT is effective in over 40% of cases and has marked maintenance effects¹⁶. NICE guidelines in the UK²⁶) recommend CBT as an effective psychotherapeutic treatment for adults with either BN or BED (Table 1). While the effectiveness of CBT for BN patients is being established, a significant challenge remains regarding the large number of untreated

patients^{9,20}). According to a report by Smink, F.R.E., et al., only approximately 10% of BN patients seek treatment at medical institutions in the Netherlands³⁸). One factor contributing to poor treatment outcomes is the high dropout rate^{13,41}), with the therapeutic alliance between therapist and patient being identified as a critical factor influencing dropout^{24,35}).

There is a pressing need for treatments that are both highly acceptable to patients and low-intensity, facilitating continuation with minimal burden in the early stages of therapy. In recent years, efforts have been made to develop Internet-based cognitive behavioral therapy (iCBT) as a low-intensity alternative, with promising reports of its effectiveness.

2. iCBT

Since the 2000s, there has been a growing body of research not only on the treatment of BN or BED patients, but also on the use of the Internet for therapeutic interventions targeting mental disorders such as depression and anxiety¹⁴). Online interventions are considered to be highly cost-effective and convenient, with the potential to reach a large population⁸). iCBT has demonstrated efficacy in the treatment of patients with depression²²), anxiety disorders¹⁵), post-traumatic stress disorder (PTSD)³⁶), and suicidal

tendencies⁴⁸). It is hoped that iCBT will also prove effective in treating those with BN or BED, where a significant number of patients remain untreated.

Agras, W.S., et al. reviewed recent advancements in CBT methods for treating patients with binge-eating symptoms²). They highlighted the fact that numerous studies were conducted to enhance the therapeutic effectiveness of CBT and improve access to treatment. In particular, recent research focused on the use of technology, such as computers and the Internet, to support treatment delivery.

1) Effectiveness of iCBT

In previous studies evaluating the effectiveness of iCBT for BN, iCBT groups demonstrated a lower frequency of binge eating compared with wait-list groups^{31,32}), and when compared with a reading therapy group, an iCBT group showed greater improvements in binge-eating symptoms, purging behaviors, and general eating disorder symptoms at the end of treatment. These improvements were sustained in a follow-up survey conducted one-year later³¹) (Table 2).

Two studies examined the effectiveness of iCBT for BED. Carrard, I., et al. compared an iCBT group utilizing *Salut BN*, an Internet-based guided self-help CBT (iGSH-CBT) program modified for BED, with a wait-

list control group by dividing adult women who met the diagnostic criteria or partial criteria for BED (excluding binge-eating frequency) into two groups¹⁰). The iCBT group received weekly email support during the treatment phase and bi-monthly support during the follow-up phase. Therapists provided motivational phone calls if participants failed to respond to emails for two weeks. The iCBT group exhibited significant improvements in binge-eating frequency, drive to lose weight, body dissatisfaction, self-esteem, and quality of life compared with the control group, with treatment effects still present at the six-month follow-up.

Wagner, B., et al. conducted a similar study, dividing adults with BED into an iCBT group, utilizing a newly developed online program, and a wait-list group⁴⁴). The intervention included 11 personalized and structured writing tasks, therapist feedback, psychoeducation (using CBT techniques), and support via telephone or email for participants exhibiting depressive symptoms or related issues. The iCBT group showed significant reductions in binge-eating episodes, ED psychopathology, depressive symptoms, and weight loss at the end of treatment, with these improvements maintained for one year.

In a study involving patients with multiple ED, ter Huurne, E.D., et al.

divided adult women diagnosed with BN, BED, or eating disorder not otherwise specified (EDNOS) under the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (DSM-IV)⁴⁾ criteria into an iCBT group using *Look at your eating (Etendebaas* in Dutch), a web-based CBT program developed in the Netherlands, and a wait-list group⁴²⁾. During the intervention, participants received bi-weekly support via email or telephone for approximately 20 minutes. Additional telephone contact was provided upon request, and unresponsive participants received follow-up emails the following week. The iCBT group demonstrated significant improvements in general ED psychopathology, body dissatisfaction, self-esteem, and social functioning. Among the diagnostic groups (BN, BED, EDNOS), iCBT was found to be most effective for BED.

2) Other studies on iCBT

Aardoom, J.J., et al. compared varying intensities of therapist support, via email, chat, and telephone, during iCBT. Participants with ED, including AN, BN, and BED, received iCBT through a website providing comprehensive information on ED, except for those in the wait-list control group¹⁾. The iCBT participants were categorized into two groups: one

received support exclusively from a computerized feedback system, while the other also received therapist support via email or Skype in addition to the feedback system. The latter group was further subdivided based on the frequency of therapist support: once or three times weekly. These groups were compared with a control group. Chat and telephone sessions were limited to 20 minutes, and email communication was restricted to a single reply. All iCBT groups demonstrated significant improvements in ED psychopathology compared with the wait-list group. Participants who received therapist support reported higher levels of treatment satisfaction than those who relied solely on computerized feedback; however, clinical outcomes, including dropout rates, did not significantly differ across the iCBT intensity levels.

Jacobi, C., et al. evaluated the efficacy of iCBT in sustaining improvements from inpatient treatment and preventing relapse in adult women with BN who had achieved at least a 50% reduction in core BN symptoms at discharge²¹⁾. Participants were assigned to one of two groups: the first received iCBT through the web-based *IN@* system, specifically designed for post-discharge care, while the second received treatment as usual (TAU). Monthly one-hour chat sessions or email exchanges were the primary modes of

support for the iCBT group. At nine months post-discharge, both groups showed a comparable 20% remission rate for binge-eating symptoms. However, the iCBT group exhibited a significantly lower frequency of vomiting compared with the TAU group. Dropout rates were not significantly different between the two groups, despite the study focusing on severe cases requiring hospitalization.

3) Limitations of iCBT

In the eight studies referenced, iCBT for BN and BED patients demonstrated treatment effects and dropout rates comparable with those of other psychotherapies. However, dropout rates during iCBT varied widely, ranging from 10 to 30%, depending on the study. This variability was attributed to differences in dropout definitions across studies, complicating general assessments. Similar to face-to-face CBT, high dropout rates have been reported for iCBT, with primary reasons cited as the challenges in establishing a therapeutic relationship with the therapist and difficulties in navigating the Internet-based platform²⁴.

While these studies generally suggest that iCBT is promising as an effective treatment, it is important to note that many programs are short-term in nature, with insufficient evaluation of long-term outcomes³⁷. Furthermore,

most studies compare iCBT with wait-list controls rather than alternative treatments, such as CBT-ED, limiting the scope of comparative analyses².

Future developments may include CBT delivered via mobile applications. However, whether such interventions should be implemented without therapist involvement requires careful consideration. Currently, due to safety concerns, iCBT delivered solely through apps without therapist guidance is not deemed suitable for treating either AN or BN patients².

IV. Guided self-help (GSH) for BN and BED patients

1. What is guided self-help (GSH)?

As previously outlined, while CBT is recognized as an effective treatment for BN and BED patients, many encounter obstacles to accessing this therapy due to financial limitations and restricted availability of medical resources. In the 2000s, researchers from Oxford University introduced guided self-help (GSH), a simplified and cost-efficient adaptation of CBT, as an effective treatment option for BN and BED patients³³. The 2017 update of the NICE guidelines²⁶ recommends that adults with BN or BED begin treatment based on a GSH program. If this approach fails to yield adequate improvement or is not well-tolerated, CBT should subsequently be offered,

either in a group format or individually (Table 1). The guidelines further delineate the elements of the GSH program, underlining its basis in CBT methodologies. The coach's primary responsibilities include promoting adherence to the program, delivering brief support sessions to motivate self-help engagement, and concentrating solely on facilitating progress within the program.

A review of GSH for ED by Perkins, S.S.J., et al., published in the Cochrane Library, indicates that while GSH demonstrates short-term effectiveness in alleviating ED symptoms and related psychiatric and interpersonal challenges, it does not result in the remission of core ED symptoms, such as binge eating and vomiting²⁸).

2. Internet-based guided self-help (iGSH-CBT)

Various methods exist for implementing GSH, but online interventions offer potential solutions to challenges, such as financial and medical accessibility⁸). *Salut BN*²⁷), an iGSH-CBT program, was developed by Net Union in Switzerland. A Japanese version is currently under development through a collaborative research project with Chiba University and the International University of Health and Welfare (IUHW). *Salut BN* consists of seven modules: motivation to change,

self-monitoring, behavioral modification, cognitive restructuring, problem-solving strategies, assertiveness training, and relapse prevention. Following an initial face-to-face interview with a therapist, the program is delivered over four months with weekly support from a trained coach using the program's secure messaging system. Coaches are trained in several sessions by the program developers, and only those who complete this training are authorized to provide coaching. Ongoing technical support is available to coaches during program implementation. The coach's role involves sending weekly messages to users through the program's anonymous messaging feature and monitoring progress. Before treatment begins, users receive secure login credentials to access the program, ensuring the anonymity and protection of personal information.

Several studies in Europe have evaluated the program's effectiveness:

Fernández-Aranda, F., et al. conducted a case-control study involving 62 adult female patients with BN¹⁷). Participants were divided into an iCBT group and a wait-list control group. Outcomes, based on food diary recordings, showed significant reductions in binge eating and vomiting, with the program being especially

effective for patients with milder ED symptoms.

Carrard, I., et al. carried out a multicenter study across Switzerland, Sweden, Germany, and Spain, including 127 adult female patients with BN or EDNOS¹¹). No waiting group was included. Post-treatment results demonstrated reductions in binge eating, vomiting, and compensatory behaviors like excessive exercise. Of those who completed the program, 23% exhibited no binge-eating symptoms, and the dropout rate was 25.2%.

Wagner, G., et al. performed RCT including 126 adult female patients with BN or EDNOS⁴⁶). Participants were assigned to either an iGSH-CBT group using *Salut BN* or a self-help group using the book *Getting Better Bite by Bite*³⁴). An 18-month follow-up assessed predictors of positive outcomes and dropout rates. Both groups demonstrated comparable improvements in binge-eating and vomiting symptoms, with no significant differences in dropout rates. Key predictors of successful outcomes in the iGSH-CBT group included high-level motivation, lower initial frequency of binge eating, and lower levels of depressive symptoms.

These findings indicate the potential of *Salut BN* to effectively support individuals with BN, particularly

through its structured, coach-supported approach.

Conclusion

iGSH-CBT for BN and BED patients has demonstrated short-term efficacy in reducing ED-related symptoms, including binge eating and vomiting. However, it does not lead to remission of core behavioral symptoms such as binge eating and vomiting, and evidence regarding its long-term effectiveness remains insufficient. In the future, the broader implementation of iGSH-CBT programs like *Salut BN* is anticipated to facilitate early intervention for BN and BED patients, as well as reduce dropout rates. Nonetheless, further research, particularly within clinical settings in Japan, is essential.

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Table 1. Psychotherapy for BN and BED (NICE guidelines, 2017)

Psychotherapy for adult BED	<ol style="list-style-type: none"> 1. Explain that the goal of psychotherapy is not weight loss 2. User-guided self-help programs focused on BED 3. Group cognitive behavioral therapy (group CBT-ED) 4. Individual cognitive behavioral therapy (individual CBT-ED)
Psychotherapy for adult BN	<ol style="list-style-type: none"> 1. User-guided self-help programs focused on BN 2. Individual cognitive behavioral therapy (individual CBT-ED)

*CBT-ED: eating-disorder-focused cognitive behavioral therapy

(Adapted and quoted from reference 26 with translation by the author)

Table 2. Comparison of therapeutic effects of iCBT for BN and BED

Study	Participants		Primary outcome measure		Dropout		Results of the follow-up period (iCBT group/Control group)	
	Author, year	n	Age (SD)	Evaluation method	Results (iCBT group/Wait-list group)	iCBT group (%)		Wait-list group (%)
BN								
1	Sanchez-Ortiz, V.C., et al, 2011 ³²⁾	76	23.9 (5.9)	Semi-structured telephone interview	•Improvement in EDE-G •Decrease in frequency of binge eating	21.1%	34.2%	•Absence of binge eating and vomiting: 39% (21%) •Not meeting diagnostic criteria: 52% (29%)
2	Ruwaard, J., et al, 2013 ³¹⁾	105	31 (n/a)	Self-administered (online)	•Improvement in EDE-Q •Reduction in frequency of binge eating and vomiting	17.1%	Reading 34.3% Wait-list 11.4%	•Improvement in binge eating maintained in the iCBT group •No difference between iCBT and reading therapy groups in terms of disappearance of binge eating and vomiting *The reading group used Reference 18.
3	Wagner, G., et al, 2013 ⁴⁵⁾	155	iCBT 24.2 (4.5) Reading 25 (3.8)	Face-to-face structured interview	No difference in improvement of binge eating and vomiting between the reading therapy and control groups	31.4%	48.2%	•Improvement of binge eating and vomiting was maintained *After the study ended, some patients continued psychotherapy, and a decrease in the frequency of binge eating and vomiting was observed
BED								
4	Carrard, I., et al, 2011 ¹⁰⁾	74	36 (11.4)	Self-administered (face-to-face)	•Improvement in EDE-Q and EDI-2 •Decrease in frequency of binge eating •Improvement in body shape concerns •Binge eating disappeared: 35% (8%)	16.2%	5.4%	•iCBT group maintained symptom improvement •No dropouts during follow-up period
5	Wagner, B., et al, 2016 ⁴⁴⁾	139	35.1 (9.9)	Self-administered (online)	•EDE-Q improvement •Decrease in frequency of binge eating •Improvement in body shape concerns	27.5%	8.6%	•Improvement of binge eating: 44.9 (4 or fewer binge-eating episodes in the past 4 weeks) •Improvement from BED: 24.6 (0 binge-eating episodes in the past 4 weeks)
6	ter Huurne, E.D., et al, 2015 ⁴²⁾	214	39.4 (11.6)	Self-administered (online)	•Improvement in EDE-Q •Improvement in concerns about eating, body shape,	10.2%	1.9%	n/a
Others								
7	Aardoom, J.J., et al, 2016 ¹⁾	354	24.2 (7.7)	Self-administered (online)	•Improvement in EDE-Q, depression, and anxiety	20.2-31.0	20.0%	•Higher frequency of treatment interventions resulted in greater improvements in quality of life related to ED at the end of the follow-up period than lower frequency interventions
8	Jacobi, C., et al, 2017 ²¹⁾	253	25.7 (7.2)	Self-administered (online)	•Decrease in frequency of vomiting •The group that exhibited binge eating and compensatory behavior after discharge showed improvement after iCBT compared with the group	32.5%	35.4%	•Maintained decrease in frequency of vomiting •Did not meet diagnostic criteria: iCBT group 55.6%, wait-list group 45.8%