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Cognitive Behavioral Therapy for Hoarding Disorder: A Systematic Review

Biriktirme Bozukluğunda Bilişsel Davranışçı Terapi: Sistematik bir Gözden Geçirme

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Abstract

Although hoarding has been considered as a type of obsessive-compulsive disorder before, some differences that were found lead to reclassify hoarding as a separate disorder under obsessive-compulsive disorder and related disorders in DSM-5. Patients with hoarding disorder have negative feelings like strong fear when considering getting rid of items and exaggerate the importance of possessions. Different cognitive behavioral therapy protocols including individual, group and self-help treatments are used for treating hoarding disorder. The aim of this study is to review empirical studies that were carried out to evaluate the effectiveness of cognitive behavioral therapy for the treatment of hoarding disorder. The 12 studies fitting the search criteria were included in this review and were summarized in terms of their methods used and their therapy characteristic. The studies included in this review suggested that cognitive behavioral therapy for hoarding disorder is effective in decreasing the symptoms of the disorder and/or the accompanying problems like depression and anxiety.

Keywords*:* Hoarding disorder, cognitive behavioral therapy, treatment, effectiveness

Öz

Biriktirme bozukluğu önceleri obsesif-kompulsif bozukluğun bir türü olarak değerlendirilmesine rağmen, son yıllarda bulunan bazı farklılıklar biriktirmenin DSM-5'te obsesif-kompulsif bozukluk ve ilişkili bozukluklar altında ayrı bir bozukluk olarak yeniden sınıflandırılmasını sağlamıştır. Biriktirme bozukluğu olan hastalar eşyalarını elden çıkarmaya ilişkin yoğun korku gibi güçlü olumsuz duygular yaşar ve sahip oldukları şeylerin önemini abartırlar. Biriktirme bozukluğu için bireysel, grup ve kendine yardım tedavilerini içeren farklı bilişsel davranışçı terapi protokolleri olduğu görülmektedir. Bu çalışmada biriktirme bozukluğu tedavisinde uygulanan bilişsel davranışçı terapinin etkililiğini değerlendirmek için yapılmış ampirik çalışmaların gözden geçirilmesi amaçlanmıştır. Ölçütleri karşılayan 12 çalışmanın yöntem ve terapi özellikleri karşılaştırılarak sunulmuştur. Biriktirme bozukluğu olan kişilere uygulanan bilişsel davranışçı terapilerin, bozukluğa ilişkin belirtileri ve/veya bozukluğa eşlik eden sorunları (depresyon, anksiyete vb.) azaltmada etkili olduğu görülmektedir.

.**Anahtar sözcükler:** Biriktirme bozukluğu, bilişsel davranışçı terapi, tedavi, etkililik.

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HOARDING disorder is characterized by excessive emotional attachment to possessions and persistent difficulty discarding them causing a clinically significant distress and impairment (American Psychiatric Association-APA 2013). Although hoarding has been considered a type of obsessive-compulsive disorder before, some differences which were found with recent research lead to reclassify hoarding as a separate disorder under obsessive-compulsive disorder and related disorders in DSM-5. Patients with hoarding disorder fear losing items that they have since they may be needed later and exaggerate the importance of possessions.

Unlike patients with obsessive-compulsive disorder, hoarders have fewer intrusive thoughts about possessions and urges to perform rituals. Distress also only becomes apparent when there is possibility of losing possessions in hoarding disorder on the contrary permanent distress in obsessive-compulsive disorder (APA 2013). Since hoarding disorder is a new diagnostic criteria, the prevalence studies of hoarding disorder are still limited but estimated of prevalence range is approximately 2–5% of the population which is twice as common as obsessive-compulsive disorder with nearly equal numbers of men and women (Frost et al. 2012).

Hoarding disorder may cause considerable negative impact on individuals including impaired quality of life, social, occupational and family functioning (Frost et al. 2000, Saxena et al. 2011). Individuals with hoarding disorder also may have difficulties with decision-making, categorization, organization and memory (Frost and Hartl 1996). Although their homes may become almost impossible to live in, most of people with hoarding disorder do not accept that they have a problem and need professional help until family members or others interfere that they seek help.

Psychological treatment for people with hoarding disorder was first administered was same treatment used for obsessive-compulsive disorder and included a special techniques of cognitive behavioral therapy (CBT) known as exposure and response prevention. According to the previous research, it was found to be beneficial for reduction of hoarding symptom in both short-term and long-term (Franklin et al. 2000). Then more special treatment protocol was developed including psychoeducation about hoarding disorder, motivational interviewing, decision-making, categorizing, organizing skills training, problem solving, cognitive restructuring and exposure (Ayers and Espejo 2011).

Different CBT protocols including individual, group (Tolin et al. 2015) and self-help treatments are used for hoarding disorder (Steketee et al. 2000, Muroff et al. 2012). Although treatment techniques of hoarding disorder are still similar to obsessive-compulsive disorder, hoarding disorder treatment is more difficult than obsessive-compulsive disorder. In addition, since motivation for treatment is low and resistance is high in hoarding disorder, dropout rates also are higher than obsessive-compulsive disorder (Williams and Viscusi 2016). Pharmacological treatments using selective serotonin reuptake inhibitors and family-based interventions also found as effective treatment method for hoarding disorder (Saxena et al. 2007, Saxena and Sumner 2014, Thompson et al. 2017).

Even though previous review studies helped to provide more information about treatment of hoarding disorder, there are some limitations regarding the extent of the reviews and methodology. Most of these studies were conducted before the publication of DSM-5 and these studies does not include participants who met hoarding disorder

criteria. In the present review, studies investigating the effectiveness of CBT programs conducted with individuals having hoarding disorder have been reviewed. The main aim of this review is examining the effectiveness of CBT for hoarding disorder treatment and emphasizing the existence of a new research and application field for clinicians.

Method

The PsycARTICLES, PsycINFO and MEDLINE databases were searched to identify articles written in English using the following keywords: (1) hoarding disorder and cognitive behavioral therapy and (2) hoarding disorder and cognitive behavioral treatment. Of the articles accessed, those which did not address the effectiveness of the treatment and those which have sample who are younger than 18 years were excluded from the study. Using this method, 12 published articles fulfilling the criteria were found. Information on the study sample such as the diagnoses of the patients, the number of patients, the diagnosis criteria, information on the methods such as treatment modalities, the presence of randomization and independent assessment and measurement tools utilized and finally information on the cognitive behavioral treatment administered such as the duration, number and frequency of sessions, the number of psychotherapists in group therapies and the number of patients in each group were evaluated. Information of the studies is outlined in Tables 1 and 2 by listing chronologically..

Table 1. Methodological characteristics of CBT studies

Study	Sample	Treatment Groups	Random.	Ind. Assessor	Measurements	Drop-out	Results	E.S.
Muroff et al. (2009) PsycINFO	ADIS-IV, HRS, SCID-II HD + MDD, GAD, SAD, SP, PTSD, OCD, any anxiety disorder, ADHD, impulse control disorder, OCPD, BPD, APD, PPD, HPD, ASPD n=32	GCBT (no control group)	No	No	Pre-, mid-, post-treatment: SI-R, CIR, SCI, CGI-S, BDI-II	0	Post-treatment: SI-R, SCI, CGI-S scores were decreased	?
Steketee et al. (2010) PsycINFO	ADIS-IV HD + MDD, GAD, SAD n=46	CBT, WL	Yes	No	Pre-, mid-, post-treatment: SI-R, HRS-I, CGI-I, BDI-II, BAI	9	Post-treatment: CBT > WL	Post-treatment : SI-R 1.81 HRS 2.29 CGI-I therapist 1.57 CGI-I patient 1.27
Ayers et al. (2011) MEDLINE	DSM-V, UHSS, SI-R HD	CBT (no control group)	No	Yes	Pre-, mid, post-treatment, 6-month follow-up: SI-R, UHSS, CIR, CGI-S, CGI-I,	2 (follow-up)	Post-treatment: SI-R, UHSS, BDI-II scores were significantly	Post-treatment: SI-R .43 UHSS

	n=12 (5 male, 7 female)				SDS, BAI, BDI-II		decreased Follow-up: they were significantly maintained	.41 BDI-II .56 Follow- up: SI-R .45 UHSS .28 BDI-II .59
Gilliam et al. (2011) PsycINFO	ADIS-IV or MINI Plus HD + depressive disorders, SP, GAD, OCD, ADHD n=45 (6 male, 39 female)	GCBT (no control group)	No	No	Pre-, mid-, post-treatment: CGI, SDS, ADL-H, SI-R, DASS	10	Post-treatment: CGI, SDS, ADL-H, SI-R, DASS anxiety, DASS depression scores were significantly decreased	Post-treatment: CGI .83 SDS 1.12 ADL-H .82 SI-R 1.31 DASS anxiety .88 DASS depression .76
Muroff et al. (2012) MEDLINE	ADIS-IV, HRS, SCID-II HD + MDD, SAD, GAD, OCD, ADHD, PTSD, OCPD n=38	GCBT+HA, GCBT, BIB (no control group)	Yes	Yes	Pre-, mid, post-treatment: HRS, SI-R, CGI-S, BDI-II, ADL-H	0	Post-treatment: GCBT+HA = GCBT > BIB	Post-treatment: SI-R GCBT+HA 3.36 GCBT 2.03 HRS GCBT+HA 2.14 GCBT 1.99 CGI-S GCBT+HA 1.79 GCBT 1.74 BDI-II GCBT+HA 1.38 GCBT 1.19 ADL_H GCBT+HA 1.77 GCBT 1.69
Muroff et al. (2014) MEDLINE	ADIS-IV HD + MDD, GAD, SAD n=37 (8 male, 29 female)	CBT, WL	Yes	No	Pre-, post-treatment, 3, 6,12-month follow-up: SI-R, HRS, CGI-S, CGI-I	6 (follow-up)	Post-treatment : SI-R, HRS, scores were significantly decreased	Post-treatment : SI-R 1.97 HRS 2.23
Pollock et al. (2014) PsycINFO	? HD + OCD, depression n=1 (female)	CBT (no control group)	No	Yes (CIR)	Pre-, post-treatment, follow-up: Ideographic measures (living in the past, sentimentality, avoidance, anxiety	0	OPT: sentimentality, avoidance, shame, discard - volume were significantly decreased OPT+DV:	OPT: sentimen-tality .02 avoidance .03 shame .01 discard -

					depression, shame, discard - information, discard - household, discard - clothing, discard - volume), CIR, SI-R, CAS, BDI-II, BSI-GSI, IIP-32		sentimentality, avoidance, discard - volume were significantly decreased Follow-up: living in the past, sentimentality, avoidance, anxiety, discard - volume were significantly decreased	volume .02 OPT+DV: sentimen-tality .10 avoidance .10 discard - volume .02 Follow-up: living in the past .06 sentimen-tality .13 avoidance .11 anxiety .03 discard - volume .01
Kellet et al. (2015) PsycINFO	CIR HD + mild intellectual abilities n=14 (9 male, 5 female)	CBT (no control group)	No	Yes (CIR)	Pre-, post-treatment, 6-month follow-up: CIR, CIR+, SI-R, GDS-LD, GDS-CS, GAS-ID	3 (follow-up)	Post-treatment: CIR+, SI-R, GDS-CS scores were significantly decreased Follow-up: SI-R scores were maintained	Post-treatment: CIR+ .83 SI-R .47 GDS-CS .39 Follow- up: SI-R .20
Levy et al. (2017) PsycINFO	ADIS-IV, MINI Plus or DIMOND HD + MDD, SAD, SP, GAD n=62 (12 male, 50 female)	CBT with WL, GCBT	Yes (CBT with WL)	No	Pre-, mid-, post-treatment: SI-R, SCI	0	Post-treatment: CBT = GCBT	Post-treatment: SI-R 1.29 SCI .98
Moulding et al. (2017) PsycINFO	MINI, SHID, CIR HD + MDD, GAD, OCD n=77	GCBT (no control group)	No	No	Pre-, post-treatment: SI-R, SCI, DASS	36	Post-treatment: SI-R, SCI, DASS depression scores were significantly decreased	Post-treat-ment:SI-R .80 SCI .54 DASS depression .37
Worden et al. (2017) PsycINFO	MINI, SIHD, DIAMOND, SCID-II HD + MDD, persistent depressive disorder n=22	GCBT (no control group)	No	Yes (CIR)	Pre-, post-treatment: CIR, CGI-S, CGI-I, SI-R, the Readiness Ruler, CSQ-8	12	Post-treatment: SI-R, CIR scores were significantly decreased	Post-treatment : SI-R 1.81 CIR 1.09
Ivanov et al. (2018) PsycINFO	SIHD, MINI HD + GAD, MDD, SAD, PD n=20	GCBT + Internet support system (no control group)	No	No	Pre-,mid-,post-treatment, 3-month follow-up: SI-R, SCI, CIR, GAF, EQ-5D	2 (follow-up)	Post-treatment: SI-R, SCI, CIR, GAF scores were significantly decreased	Post-treat-ment:SI-R 1.57 SCI 1.08 CIR

	(2 male, 18 female)							.96 GAF -1.21

Assessments: ADIS-IV: Anxiety Disorders Interview Schedule-IV; DIAMOND: Diagnostic Interview for Anxiety, Mood, and Obsessive Compulsive and Related Neuropsychiatric Disorders; DSM-IV: Diagnostic and statistical manual of mental disorders-IV; MINI: Mini-International Neuropsychiatric Interview; MINI Plus: Mini-International Neuropsychiatric Interview Plus; SCID-II: Structured Clinical Interview for DSM-IV Axis II Personality Disorders; SIHD: Structured Interview for Hoarding Disorder; **Disorders:** ADHD: Attention Deficit Hyperactivity Disorder; ASPD: Antisocial Personality Disorder; APD: Avoidant Personality Disorder; BPD: Borderline Personality Disorder; GAD: Generalized Anxiety Disorder; HD: Hoarding Disorder; HPD: Histrionic Personality Disorder; MDD: Major Depressive Disorder; OCD: Obsessive Compulsive Disorder; OCPD: Obsessive Compulsive Personality Disorder; PD: Panic Disorder; PPD: Paranoid Personality Disorder; PTSD: Post-Traumatic Stress Disorder; SAD: Social Anxiety Disorder; SP: Specific Phobia; **General Abbreviations:** ?: Not Specified; **Measurements:** ADL-H: Activities of Daily Living for Hoarding Scale; BAI: Beck Anxiety Inventory; BDI-II: Beck Depression Inventory-II; BSI: Brief Symptom Inventory; **BSI-GSI: Brief Symptom Inventory-Global Severity Index;** CAS: Compulsive Acquisition Scale; CGI: Clinician's Global Impression Scale; CGI-I: Clinician's Global Impression Improvement Scale; CGI-S: Clinician's Global Impression Severity Scale; CIR: Clutter Image Rating Scale; CIR+: Photographic Assessments of Participants Homes; DASS: Depression Anxiety Stress Scale; EQ-5D: EuroQoL Quality of Life Scale; GAF: Global Assessment of Functioning Scale; GAS-ID: Glasgow Anxiety Scale-Intellectual Disability; GDS-LD: Glasgow Depression Scale-Learning Disabilities; GDS-LD-CD: Glasgow Depression Scale-Learning Disabilities-Carer Supplement; HRS: Hoarding Rating Scale; HRS-I: Hoarding Rating Scale-Interview, IIP-32: Inventory of Interpersonal Problems-32; SDS: Sheehan Disability Scale; SCI: Saving Cognitions Inventory; SI-R: Savings Inventory-Revised; UHSS: UCLA Hoarding Severity Scale; **Treatments and Techniques:** BIB: Bibliotherapy; CBT: Cognitive Behavioral Therapy; GCBT: Group Cognitive Behavioral Therapy; GCBT+HA: Group Cognitive Behavioral Therapy with Home Assistants; OPT: Outpatient Sessions; OPT+DV: Outpatient Sessions with Domiciliary Visits; **Ind. Assessor:** Independent Assessor; **Random.:** Randomization; **E.S.:** Effect Size

Results

Characteristics of the Methodologies of the Studies

Sample

The participants in the studies were patients who are more than 18 years and meet the criteria of hoarding disorder. In addition to that, major depressive disorder, generalized anxiety disorder, social anxiety disorder and obsessive-compulsive disorder were comorbid disorders in most studies. Patients were usually diagnosed according to the ADIS-IV, SIHD, MINI and SCID-II criteria and in some studies, according to criteria of the DSM-IV, MINI Plus or DIMOND. The sample sizes of the studies ranged widely from 1 (Pollock et al. 2014) to 77 cases (Moulding et al. 2017).

Treatment and Control/Comparison Groups

In 4 studies, only the effectiveness of CBGT and in 3 studies, only the effectiveness of individual CBT was investigated and comparison could not be made because there was no control group. In addition, there was a study investigating the effectiveness of internet support system in combination with CBGT (Ivanov et al. 2018), a study comparing individual CBT to CBGT (Levy et al. 2017) and two studies comparing individual CBT to waiting list group (Steketee et al. 2010, Muroff et al. 2014). There was also a study comparing three different treatment groups. In a study, CBGT with home assistances, CBGT and bibliotherapy were compared (Muroff et al. 2012).

Assignment to Treatment Groups

Most of studies with more than one intervention group (4 studies) were randomized, controlled trials. In the remaining 8 studies, there was no comparison or control group.

Measurements

The effectiveness of interventions was assessed through pre- and post-treatment evaluation and in addition, in some studies follow- up measurements were received at different time intervals to evaluate the long-term effectiveness of treatments. In 5 of the 12 articles, pre-, mid- and post-test and in 2 of them, only pre- and post-test evaluation was made without any follow-up evaluation. Follow-up evaluations were performed in a time range extending from 3 months to 1 years after the end of the treatment. The follow-up evaluation was given at 3 months in a study (Ivanov et al. 2018), 6 months in 2 studies (Ayers et al. 2011, Kellett et al. 2015) and between 3 months and 1 year in

another study (Muroff et al. 2014). In another study, there was no information about time of the follow-up evaluation (Pollock et al. 2014).

Measurement Methods

In 6 studies, in the evaluation of symptoms prior to and after treatment, both self-report and clinician measurements were employed. However, in other 6 studies, measurements were based only the self-report from the patients without any clinician's report measurements. In addition, in 3 studies of 12 studies, in the pre-test, mid-test post-test and/or follow-up evaluations, an independent assessor was used (Muroff et al. 2012, Pollock et al. 2014, Kellet et al. 2015).

Since different studies had different areas of focus, different measurements were used. Some measurements were directed towards investigating hoarding symptoms (the Hoarding Rating Scale-Self Report, UCLA Hoarding Severity Scale etc.), some were focused on investigating problems accompanying hoarding disorder such as depression and anxiety (the Beck Depression Inventory, Beck Anxiety Inventory etc.) and others aimed to investigate the impact of the disorder on functionality (EuroQoL Quality of Life Scale, Global Assessment of Functioning Scale etc.). In a study, nomothetic measures such as living in the past, sentimentality, avoidance, anxiety, depression, shame, discard - information, discard - household, discard - clothing, discard - volume were also used along standard measurements (Pollock et al. 2014).

Content and Application of Individual CBT in the Studies

Therapy Techniques

The most frequently used techniques were motivational enhancement strategies and skills training for organizing, decision making and problem solving. In 4 studies, the therapy programs included cognitive techniques such as cognitive restructuring. In addition, there were 3 studies which exposure technique was used (Steketee et al. 2010, Pollock et al. 2014, Kellet et al. 2015) and 2 studies which psycho education technique was used (Pollock et al. 2014, Ivanov et al. 2018). In a study, there was no information about techniques which were used (Ayers et al. 2011). In any studies, treatment did not include families.

Table 2. Therapy characteristics of CBT studies

Study	Individual or Group Therapy	Duration of Sessions	Number of Sessions	Frequency of Sessions	Number of Therapists	Number of Group Members
Muroff et al. (2009) PsycINFO	Group	2 hours	16-20	Weekly	?	5-8
Steketee et al. (2010) PsycINFO	Individual	1 hour (every fourth session 2 hours)	26	Weekly	3	-
Ayers et al. (2011) MEDLINE	Individual	1 hour (home visits 75-90 min)	26	First 20 sessiosns twice weekly, last 6 sessions weekly	1	-
Gilliam et al. (2011) PsycINFO	Group	90 min	16-20	Weekly	2	4-12
Muroff et al. (2012) MEDLINE	Group	2 hours (home visits 90 min)	20	Weekly	2	5-8
Muroff et al. (2014)	Individual	1 hour office session or 2	26	Weekly	?	-

MEDLINE		hours home session				
Pollock et al. (2014) PsycINFO	Individual	?	49 (23 CBT, 22 CBT + home visits, 4 follow-up)	?	1	-
Kellet et al. (2015) PsycINFO	Individual	2 hours	12	Weekly	1	-
Levy et al. (2017) PsycINFO	Individual and Group	Individual CBT 1 hour (every fourth session 4 hours) GCBT 90 min	Individual CBT 26 GCBT 16-20	Weekly	?	?
Moulding et al. (2017) PsycINFO	Group	1.5-1.75 hours	12	Weekly	?	?
Worden et al. (2017) PsycINFO	Group	90 min	16	Weekly	2	?
Ivanov et al. (2018) PsycINFO	Group	2.5 hours	16	Weekly	2	?

Session Characteristics

When the duration of sessions in the studies was evaluated, it was established that generally the duration varied between 1-2 hours, although there were also some studies that had different time such as 75 or 90 minutes, but one study did not report this detail (Pollock et al. 2014). Frequencies of individual therapies were generally weekly, but in a study it was reported that they changed between weekly or twice weekly (Ayers et al. 2011). The number of sessions ranged from a minimum 12 (Kellet et al. 2015) to maximum 49 (Pollock et al. 2014) and they were usually 26 sessions.

The Number of Therapists

While there was only 1 therapist in 3 studies and 3 therapists in 1 studies, 2 studies did not report this information.

Content and Application of CBGT in the Studies

Therapy Techniques

The most frequently used techniques were motivational enhancement strategies, skills training for organizing, decision making and problem solving and psycho education. In 4 studies, the therapy programs included cognitive techniques such as cognitive restructuring. In addition, there were 3 studies which behavioral experiments were used (Muroff et al. 2009, Muroff et al. 2012, Moulding et al. 2017) and 2 studies which exposure technique was used (Muroff et al. 2009, Moulding et al. 2017). While mindfulness based techniques was used in a study (Ivanov et al. 2018), there was no information about techniques which were used in another study (Gilliam et al. 2011). In any studies, treatment did not include families.

Session Characteristics

When the duration of sessions in the studies was evaluated, it was established that generally the duration varied between 2-2.5 hours, although there were also some studies that had different time such as 1 hours or 75 minutes. Frequencies of group thera-

pies were generally reported as weekly. The number of sessions ranged from a minimum 16 to maximum 20.

The Number of Group Members and Therapists

With regards to the number of group members, in 4 of 7 studies, the number of members in the therapy group was not reported while in other studies, the number of members was changed between 4-12 (Gilliam et al. 2011) and 5-8 (Muroff et al. 2009, Muroff et al. 2012). While there were 2 therapists in 3 studies and 4 therapists in 1 studies, 2 studies did not report this information.

Findings of the Studies

Comparison between Groups

In the evaluation of 7 studies investigating the effectiveness of individual CBT and CBGT without control groups separately, it was found that there were significant results for hoarding disorders. Similarly, it was also found that there were significant results for hoarding disorders in the study investigating the effectiveness of CBGT with internet support system (Ivanov et al. 2018). In addition, the study comparing individual CBT and CBGT showed that both of the treatments had significant results similarly (Levy et al. 2017). While individual CBT was found more effective than waiting list groups in 2 studies (Steketee et al. 2010, Muroff et al. 2014), a study comparing CBGT with home assistant, CBGT and bibliotherapy showed that CBGT with home assistants and CBGT were superior than bibliotherapy (Muroff et al. 2012).

Changes in Symptoms

While both individual CBT and CBGT were found to be effective in decreasing symptoms of the hoarding disorder separately in 7 studies, a study investigating the effectiveness of CBGT with internet support system also showed a similar result. In a study comparing individual CBT and CBGT also showed that both of the treatments were effective equally in decreasing symptoms of the hoarding disorder (Levy et al. 2017). In addition, two studies reported that individual CBT was more effective in decreasing symptoms than waiting list group (Steketee et al. 2010, Muroff et al. 2014). In another study, both CBGT with home assistants and CBGT were also equally more effective in decreasing symptoms than bibliotherapy group (Muroff et al. 2012).

Accompanying Problems

In some of the studies reviewed, the accompanying problems such as depression and anxiety and the effects of the treatments on these problems were also evaluated. A few of these studies showed that both individual CBT and CBGT were similarly effective in reducing the symptoms accompanying the hoarding disorder separately (Ayers et al. 2011, Gilliam et al. 2011, Moulding et al. 2017).

Follow-up Evaluations

Except one study, it was stated that the changes at the post-treatment was remained and positive influences of the treatment was maintained in all of the studies which that included follow-up evaluations (5 studies). Only in one study, the changes was not maintained and no significant improved over time was reported (Ivanov et al. 2018).

Discussion

It is known that individuals with hoarding disorder have impairment in social and occupational functioning, problems in family life (Saxena et al. 2011), and decrease in quality of life (Frost et al. 2000). Therefore, it is important to find effective treatment methods in an attempt to decrease symptoms of this disorder that cause significant problems in both individuals' occupational and social lives. Although CBT is an effective method that used to reduce these problems in treatment of hoarding disorder, there may be some reasons why there are a few studies in this issue. The first of which may be that hoarding disorder is a new diagnostic criterion under the title of obsessive-compulsive disorder and related disorders in DSM-5. Another reason that may explain why there were few studies in this issue may be that patients with hoarding disorder are generally resistant to begin and continue to the therapy process.

In the present article, empirical research articles which was published between 2011 and 2018 and examine the effectiveness of CBT were systematically reviewed. Since hoarding disorder is a new diagnosis criterion in DSM-5, there was not any study on this issue before 2011. In addition, the studies on hoarding disorder were limited with only 12 studies and no study was found on this issue which was conducted in Turkey.

When methodological characteristics of the studies reviewed were evaluated, it was found that there are different studies examining CBGT alone, individual CBT as solo or internet support system in combination with CBGT without control group and comparing individual CBT and CBGT, individual CBT and waiting list or CBGT with home assistances, CBGT and bibliotherapy. While in some studies independent assessor was used, some other studies had not comparison or control group. In addition, while some of the studies presented follow-up evaluations that changes in between 3 months and 1 years after the end of the treatment, some studies used nomothetic measures such as living in the past, sentimentality, avoidance, anxiety, depression, shame, discard - information, discard - household, discard - clothing, discard - volume along standard measurements.

In all the studies reviewed, CBT programs were found to be effective in decreasing symptoms of hoarding disorder. Moreover, they were found to be effective in decreasing accompanying problems such as depression and anxiety. It was also demonstrated that the treatment contributes to the improvement of functioning in a study investigating the effectiveness of CBGT with internet support system (Ivanov et al. 2018). Furthermore, studies including follow-up evaluations also showed that benefits obtained in the end of the treatment were maintained for long periods. Studies that compare individual CBT and waiting group also showed that CBT is effective than waiting list. Yet, there should be more studies including comparison groups and follow-up evaluation. However, the fact that there are a few clinicians in Turkey qualified to apply CBT is an important factor that makes it difficult to use this treatment. Therefore, it is necessary to have an adequate number of therapists trained to administer CBT.

The study which compared effectiveness of individual CBT and CBGT demonstrated that both treatment programs had similar effects in decreasing symptoms of the hoarding disorder. However, since these results are not enough to give a certain answer to the question whether individual CBT or CBGT is superior to decrease symptoms of hoarding disorder, more studies about hoarding disorder are needed.

According to literature review, pharmacotherapy including selective serotonin reuptake inhibitors (Saxena et al. 2007, Saxena and Sumner 2014) and family-based interventions (Thompson et al. 2017) are also effective methods in the treatment of hoarding disorder. However, it was not found any study which compare CBT and these two different treatment methods in the present review.

While CBT programs that were applied in the studies mostly include motivational enhancement strategies, skills training for organizing, decision making and problem solving and psycho-education techniques, only exposure and response prevention techniques were used in some studies. Studies demonstrated that treatments which have different CBT techniques are effective to decrease symptoms of hoarding disorder. This situation raises a question as which BDT techniques is superior in the treatment of hoarding disorder. However, since there are only a few articles compared CBT or CBGT programs using different techniques reviewed in the present study, it was difficult to reach a certain conclusion on this issue. It is recommended that studies for hoarding disorder which will be carried out in the future should aim to investigate which techniques are more effective. Information obtained from these studies would have an opportunity to make the treatment more practical.

In the present review, therapies that were found to be effective had usually similar durations. Although short term therapy programs are as effective as long-term therapy programs to decrease symptoms of hoarding disorder, it is not possible to reach a certain conclusion about treatment duration based upon these findings. Similarly, it is not also known whether the number of therapists leading the group in the therapies or the number of members in the group therapies is a significant factor in the efficacy of the treatment. Therefore, it is also recommended that studies aiming to determine the components of therapy, such as the ideal duration of therapy and the size of the group, should be performed to provide applicability in terms of time and higher efficiency in the future. In addition, since patients participating in the studies reviewed in this article have different demographic and clinical characteristics, the efficacy of therapy may have been influenced by these variables as well. Yet, the studies do not give us enough information to determine which patient group obtains the most benefit from which CBT program. That's why, studies are also required to determine the variables that predicting the level of benefit obtained from the treatment.

No study that was conducted in Turkey was found in the present review. Though there was not any study about the prevalence of hoarding disorder, it is thought that this rate is not so low. Therefore, it is important to recruit studies that remark lack of methodology about hoarding disorder in our country.

Conclusion

In conclusion, although there are many research questions that require to work on them, there are several evidences that CBT programs are effective methods in the treatment of hoarding disorder. Even though this method seems to be not economical since it must be administered by trained personnel and the therapies consume longer time, the fact that short-term interventions show positive results increases the feasibility of the method..

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