

Evaluating the Outcomes of a CBT-Based Hoarding Disorder Program in Improving Living Conditions

Audrey Hodgins, Chioma Obiakor, Gregory Saxe, and Tim Aubry

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Author Biographies: *Audrey Hodgins*, is a PhD Candidate in Clinical Psychology at the University of Ottawa. Her research focuses on cognitive accessibility and the experiences of individuals with cognitive disabilities in education and employment settings. Her work aims to identify barriers within training and assessment systems and develop more accessible, inclusive approaches that support individuals in reaching their academic and vocational goals. *Chioma Obiakor*, is the Program Manager of the Hoarding Assistance Team at Options Housing in Ottawa, Canada. She is a Registered Social Service Worker (RSSW) and holds a Social Service Worker Diploma and a Master of Business Administration (MBA). With extensive experience in the social services sector, Chioma has held a variety of roles, including Assistant Manager of Transitional Shelter Services, Case Manager, Shelter Support Worker, and Community Outreach Worker. In her current role, she leads initiatives that support individuals experiencing hoarding challenges and collaborates with community partners to address housing stability issues. Chioma also serves as Co-Chair of the Ottawa Hoarding Response Coalition and is a member of the Ontario Hoarding Network, where she works alongside agencies and stakeholders to develop coordinated responses aimed at preventing evictions and reducing homelessness in Ottawa. *Gregory Saxe*, is a case manager for the Hoarding Assistance Team at Options Bytown in Ottawa, Canada. He has a degree in Ethics and over 25 years of experience working with special populations, including adults living with acquired brain injury, youths at risk, and

supporting those with hoarding behaviour. As a case manager, Greg has co-facilitated the Buried in Treasures workshop, a 16-week treatment program, and manages a caseload of adults and families providing support to individuals living with hoarding behaviours who are at risk of losing their housing. Greg's work also includes writing mediation agreements in landlord-tenant disputes, coordinating complex support plans and providing crisis intervention. *Tim Aubry*, is an Emeritus Professor in the School of Psychology and Senior Researcher at the Centre for Research on Educational and Community Services at the University of Ottawa. His areas of research include community mental health services, homelessness, and Housing First. Throughout his career, he has collaborated on research projects with community organizations and government, contributing to the development of social and health programs and policies.

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Corresponding Author: Audrey Hodgins, PhD Candidate in Clinical Psychology at the University of Ottawa. Email: ahodg101@uottawa.ca.

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Abstract

An outcome evaluation was conducted on a CBT-based hoarding program. This program integrates one-on-one case management with the Buried in Treasures (BIT) group, a peer-led CBT intervention, for people in permanent supportive housing at risk of losing their homes due to hoarding. Results for 13 clients indicate a significant improvement in living conditions ($p = 0.016$) with a moderate effect ($d = 0.776$) after participating in the program. Additionally, results suggest that combining both individual and group interventions may be more effective than case management alone. These findings have important implications for the design of future hoarding disorder interventions.

Introduction

It is estimated that two in every 100 people in the general population meet the criteria for hoarding disorder (Postlethwaite et al., 2019). Hoarding was officially recognized as a mental disorder and added to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) in 2013 (American Psychiatric Association, 2013). Individuals affected by this disorder experience challenges when it comes to letting go of their possessions, leading to clutter. This can impact one's well-being and living conditions, as well as put them at risk of eviction.

Currently, there is no established 'gold standard' treatment for Hoarding Disorder, although a variety of interventions have demonstrated effectiveness. Cognitive-behavioral therapy (CBT) is one of the best-studied treatment methods for hoarding disorder and is effective (Steketee & Frost, 2013; Williams & Viscusi, 2016; Rodgers et al., 2021). Key components of CBT for hoarding involve engaging in sorting and discarding practices, restricting acquiring behavior, and cognitive restructuring to challenge maladaptive belief patterns about possessions.

However, it is important to note that while CBT has shown efficacy in reducing

symptoms associated with hoarding, research suggests that only 25%-43% of participants demonstrate clinically significant changes in hoarding behaviors (Tolin et al., 2015). Another effective approach for improving hoarding behavior involves using support groups (International OCD Foundation, n.d.).

A popular support group intervention is the Buried in Treasures Workshop. This workshop is either peer or clinician-led and has demonstrated significant improvements in hoarding symptoms using CBT techniques (Frost et al., 2011; Mathews et al., 2016). Additionally, notable reductions in hoarding symptoms have been observed following participation in the Buried in Treasures group compared to a waitlist control, with treatment response rates like those found in longer, therapist-led individual and group interventions (Frost et al., 2012).

Description of the Hoarding Assistance Team Program

This paper presents the findings of an outcome evaluation of the Hoarding Assistance Team (HAT) at Options Bytown, a community agency located in Ottawa, Canada, that provides housing with case management support. HAT is intended for people living in supportive and community housing who are at risk of losing their homes due to hoarding

behaviors. The team offers the Buried in Treasures intervention individually through case management and in a group format for tenants in permanent supportive housing with a history of homelessness and hoarding disorder using cognitive behavioral therapy (CBT) techniques, in addition to case management.

The case manager works one-on-one with clients to reduce clutter in their homes so that their living space is safe. This is achieved by integrating de-cluttering supports with CBT therapy and skills building. In addition, clients are offered the opportunity to participate in the Buried in Treasures group (BIT). The BIT group framework, based on the work of Tolin et al. (2013), is a self-help psychoeducational group designed to empower individuals struggling with hoarding disorder.

The BIT group is offered over a 16-week period and can accommodate a maximum of 12 participants. Each week focuses on a relevant skill relating to hoarding and includes: (1) Getting to know each other; (2) Do I Have a Problem?; (3) What Makes it Difficult to Overcome Hoarding?; (4) Solutions and Personal Goals; (5) How did This Happen?; (6) Enhancing Motivation; (7) Help with Reducing Acquiring; (8) Sorting and Discarding Getting Ready Part 1; (9) Sorting and Discarding Getting Ready Part 2; (10) Sorting and Discarding Lets go!; (11) Sorting and Discarding Succeeding; (12) Concrete Plan for Continued Support; (13) What Will be Most Difficult Moving Forward?; (14) Overcoming Unhelpful Beliefs and Over-Thinking; (15) Maintaining Success; (16) Completion.

By offering a structured and supportive group environment for individuals to better understand and confront their hoarding tendencies, the BIT group introduces an innovative intervention for addressing hoarding. Overall, the program's short-term goal is to reduce hoarding behaviors and improve living conditions, which will enhance

well-being. In the long term, the goal is to prevent eviction due to hoarding and strengthen supportive housing programs' capacity to address hoarding among its tenants.

Methodology

Clients

Data was collected from 12 clients receiving services from the HAT program. Eligibility criteria included: (1) residing in Ottawa; (2) being at least 18 years old; (3) providing consent for referral; (4) currently living in social housing, supported housing, or receiving a housing subsidy; and (5) having their housing at risk due to hoarding behavior. Formal diagnostic interviews to assess for hoarding disorder were not conducted, but the case manager evaluated symptoms through participant self-report and an in-home assessment at the referral stage.

The participating clients were aged between 21 and 73 years and consisted of nine females and three males. It's important to note that all clients had at least one additional diagnosis alongside hoarding disorder (See Table 1). These co-morbid diagnoses were based on referral sources and self-report information.

Table 1
Client Demographics

Client	Age	Gender	Co-Morbid Diagnosis
1	24	Female	Post-Traumatic Stress Disorder
2	61	Female	Addiction, Post- Traumatic Stress Disorder
3	65	Female	Borderline Personality Disorder, Post-Traumatic Stress Disorder
4	53	Female	Substance Use Disorder, Post- Traumatic Stress Disorder, Fibromyalgia, Spinal Cord Injury
5	57	Female	Developmental Disorder

6	52	Female	Addiction
7	72	Female	Addiction
8	54	Male	Neuro-divergent
9	21	Female	Addiction
10	64	Male	Addiction
11	73	Male	Depression, Diabetes
12	39	Female	Heart Condition, Substance Use Disorder, Post- Traumatic Stress Disorder

Program Services

Out of the 12 clients in the evaluation, four clients received exclusively one-on-one case management support while eight clients participated in both case management and BIT groups. Reasons for the four clients receiving only one-on-one case management were as follows:

- Client 1: Voluntarily chose not to participate in the BIT group despite it being offered.
- Client 2: Started the BIT group but was disruptive, leading to removal from the group.
- Client 3: Started the BIT group but did not complete it due to challenges related to group dynamics (client 3).
- Client 4: Not offered the BIT group because of the immediate risk of eviction and requiring more intensive one-on-one support.

The HAT case manager had over 20 years of diverse and progressive social service work experience, undergraduate-level CBT training from McMaster University, and certifications in Motivational Interviewing, Treatment for Concurrent Disorders, and Safe Management's Crisis Intervention Training Program "Train-the-Trainer". Services provided by the case manager included:

- Functional skills development:
Focused on developing CBT practical

- skills related to the decluttering process
- Counselling services: Ongoing emotional and psychological support to address the challenges associated with hoarding and related issues using CBT techniques
- Referral services: Connection to additional community resources and specialized services as needed by the client
- Appointment accompaniment: Support when attending important appointments
- Advocacy and service coordination: Active support in navigating systems of care and advocating for clients' needs

Eight clients participated in the BIT groups, which were offered in two separate sessions (May 2023 - September 2023 and October 2023 - January 2024). These sessions were led by the same peer facilitators: the HAT case manager and a former client who had successfully completed the BIT program. Both facilitators received training from the authors of "Buried in Treasures: Help for Compulsive Acquiring, Saving, and Hoarding" (Tolin et al., 2013) and "Leading the Buried in Treasures Workshop: A Facilitator's Manual" (Shuer & Frost, 2011). Additionally, the case manager completed 14 hours of one-on-one training at the UBC Centre for Collaborative Research on Hoarding.

Measures

Baseline and outcome hoarding severity level was assessed using the Clutter Image Rating Scale (CIR), completed by the referral source as part of the program's referral form, and again at the 6-month time frame by the case manager. This visual scale includes nine evenly spaced photographs illustrating different levels of clutter severity, ranked from 1 (minimal clutter) to 9 (extreme clutter) across three common household areas: the living room, kitchen, and bedroom

(Frost et al., 2008). The CIR shows good reliability across settings (clinic vs. home) ($r = 0.82$) and raters (participant vs. experimenter) ($r = 0.94$). Additionally, the CIR shows good convergent validity with measures like the Clutter Scale (CS) for experimenter ratings in the home ($r = 0.78$).

The Activities of Daily Living Scale–Hoarding (ADL-H) was used to address whether taking part in HAT led to various improvements for individuals living in supportive and community housing at risk of losing their homes due to hoarding. This tool is a well-established measure used to assess the impact of hoarding using three subscales: activities of daily living, living conditions, and safety issues. The version of the ADL-H used was adapted from *Treatments That Work: Therapist Guide* by Steketee and Frost (2013). The measure was completed by the case manager in collaboration with clients.

The focus of the study on the ADL-H was based on the primary targeted outcomes identified during the initial planning phase. A logic model was developed in collaboration with program staff to guide the evaluation. As a result, improvements in daily living activities, living conditions, and safety were identified as key short-term outcomes.

The Activities of Daily Living Subscale includes 16 questions on activities affected by clutter including how easily someone can: prepare food, use the refrigerator, use the stove, use the kitchen sink, eat at a table, move around the unit, exit the home quickly, use the toilet, use the bath/shower, use the bathroom sink, answer door quickly, sit in the sofa/chair, sleep in the bed, do the laundry, find important things and care for animals.

Next, the Living Conditions Subscale includes seven questions on problems in the home relating to structural damage (floors, walls, roof, etc.), presence of rotten food items, insect infestation, presence of human urine or feces, presence of animal urine or feces, water not working and heat not working.

Lastly, the Safety Issues Subscale includes 6 questions on types of problems including fire hazards, unsanitary conditions, moving medical equipment through the home, exits being blocked, safety of stairs/hallways, and clutter outside the home.

The ADL-H yields an average score ranging from 1.0–5.0 for each of the three subscales. An average score in the 3 range is likely to indicate substantial problems with functioning due to clutter. The ADL-H was completed by the case manager together with clients at the initial Intake session (Time A) and at around the six-month time point (Time B).

Data Analysis

All 12 clients' scores were analyzed through a paired sample t-test to examine the results of ADL-H on all three subscales after six months of being in the HAT program. Approval was obtained from the Health Sciences and Science Research Ethics Board at the University of Ottawa (H-06-24-10477) for the methodological process.

Results

The results demonstrate significant changes in baseline vs outcome hoarding severity scores on the Clutter Image Rating Scale and significant changes in all three subscales of the Activities of Daily Living–Hoarding after six months of participating in the HAT program.

Baseline vs Outcome Hoarding Severity based on the Clutter Image Rating Scale

Bedroom. The mean (5.33, SD= 1.30) for the clients at Time A was different from the mean (3.58, SD= 1.16) for clients at Time B, $t(11) = 4.26$, $p = 0.001$. The statistically significant two-sided p-value suggests a significant decrease in hoarding severity in the bedroom. Differences in the pre-post means reflect a large effect, $d = 1.23$, 95% CI [.46, 2.0] (Cohen,

1998).

Living Room. The mean (5.50, SD= 1.68) for the clients at Time A was significantly different from the mean (3.42, SD= 1.16) for clients at Time B, $t(11) = 4.8, p = < 0.001$, in line with a decrease in hoarding severity in the living room. Differences in the pre-post means reflect a large effect, $d = 1.39$, 95% CI [.57, 2.17] (Cohen, 1998).

Kitchen. The mean (4.33, SD= 1.83) for the clients at Time A was significantly different from the mean (2.50, SD= 1.00) for clients at Time B, $t(11) = 3.70, p = 0.03$, indicating a decrease in hoarding severity in the kitchen. Differences in the pre-post means reflect a large effect, $d = 1.08$, 95% CI [.35, 1.80] (Cohen, 1998).

Activities of Daily Living- Hoarding

Activities of Daily Living. The mean (4.31, SD= .52) for the clients at Time A was significantly different from the mean (1.49, SD = .41) for clients at Time B $t(11) = 4.31, p = 0.001$ (See Figure 1), in the direction of improvements

on Activities of Daily Living. Differences in the pre-post means reflect a large effect, $d = 1.2$, 95% CI [.47, 2.0] (Cohen, 1998).

Living Conditions. The mean (1.59, SD= .48) for the clients at Time A was significantly different from the mean (1.27, SD = .35) for clients at Time B $t(11) = 3.07, p = 0.011$ (See Figure 2). The differences indicated improvements in Living Conditions from Time A to Time B. Differences in the pre-post means reflect a large effect, $d = .89$, 95% CI [.20, 1.50] (Cohen, 1998).

Safety Issues. The mean (2.20, SD= .47) for the clients at Time A was significantly different from the mean (1.50, SD = .12) for clients at Time B $t(11) = 5.51, p = < 0.001$ (See Figure 3). The differences indicated improvements in Safety Issues between Time A and Time B. Differences in the pre-post means reflect a large effect, $d = 1.6$, 95% CI [.71, 2.44] (Cohen, 1998).

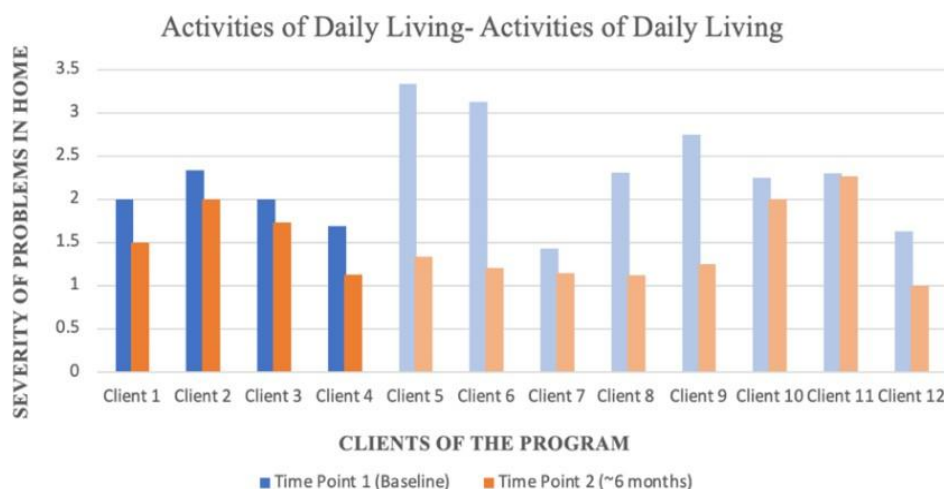


Figure 1

The severity of activities of daily living for clients at Time A and Time B.

Note. Clients 1, 2, 3 and 4 are receiving case management (CM). Clients 5, 6, 7, 8, 9, 10, 11 and 12 are receiving both case management (CM) services and the Buried in Treasures group (BIT). Higher scores on the measure reflect higher levels of severity.

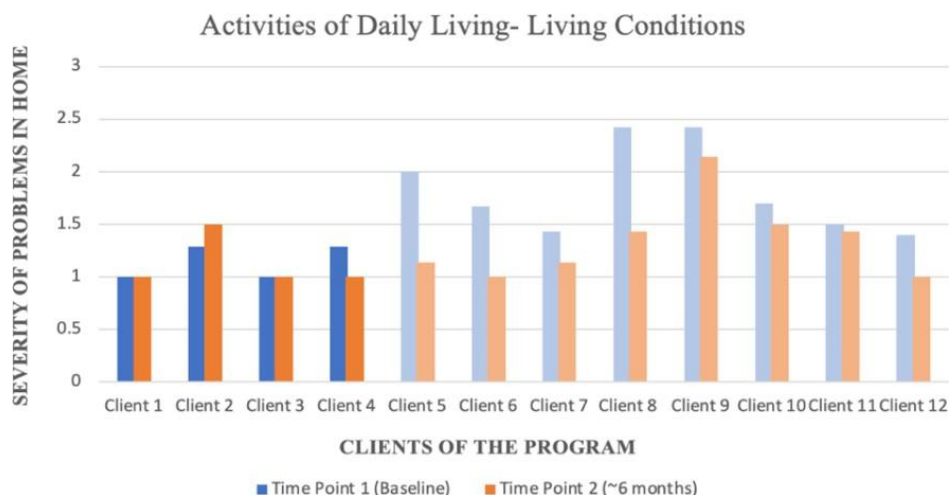


Figure 2

The severity of living conditions for clients at Time A and Time B.

Note. Clients 1, 2, 3 and 4 received only case management (CM). Clients 5, 6, 7, 8, 9, 10, 11 and 12 received both case management (CM) services and the Buried in Treasures group (BIT). Higher scores on the measure reflect higher levels of severity.

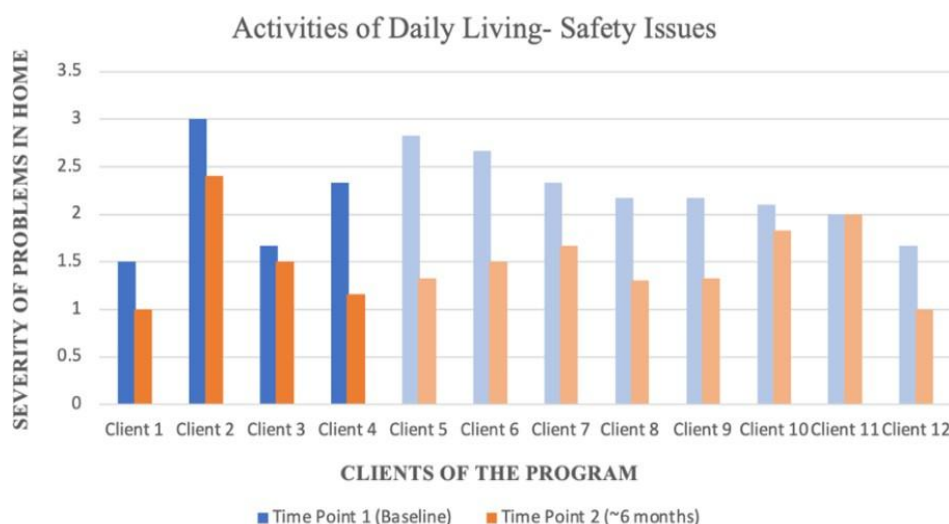


Figure 3

The severity of safety issues for clients at Time A and Time B

Note. Clients 1, 2, 3 and 4 are exclusively in case management (CM), Client 5, 6, 7, 8, 9, 10, 11 and 12 are both case management (CM) services and the Buried in Treasures group (BIT). Higher scores on the measure reflect higher levels of severity.

Discussion

Implications and Future Directions

The results of this study demonstrate that hoarding programs who offer a combination of the BIT group and one-on-one case management or exclusively case management

services can lead to improvements in activities of daily living, living conditions, and safety issues for individuals currently living in social housing, supported housing, or receiving a housing subsidy who are at risk of losing their home due to hoarding behavior. These findings are further supported by the significant reductions observed in hoarding severity over the course of the intervention. It is important to note that all clients (whether exclusively in case management or in both services) improved in activities of daily living after six months of being in the program ($n=12$). However, differences emerged in living conditions. Among participants who received only case management ($n = 4$), outcomes varied: two remained the same, one worsened, and one improved. Conversely, those in both services ($n=8$) all improved in living conditions during the same time frame. While this could be due to limitations such as differences in baseline severity between the groups (case management alone vs combined) or the numerous co-morbid diagnoses present in the case management only group, the consistent improvement in the combined group raises the possibility that skills learned in the BIT group may play an important role in improving living conditions. Finally, safety issues improved across all clients. All participants receiving only case management ($n = 4$) showed improvement, while among those receiving both services, most ($n = 7$) improved, and one remained unchanged.

Taken together, these findings highlight the potential benefit of taking part in programs like HAT for reducing problems associated with hoarding, whether exclusively in case management services or by taking part in the combined intervention. When it comes to living conditions, the findings do however suggest that participation in both the BIT group and case management may offer added value beyond case management alone, although this cannot be concluded with certainty due to study limitations.

Despite these promising findings, it is

important to interpret the findings of this study with caution due to the pre- post-design without a comparison group that limits the ability to rule out other factors contributing to improvements and the small sample size. Additionally, hoarding is a complex condition where improvement often requires long-term treatment (e.g., two years). Accordingly, it is possible that the results may not accurately reflect the true effectiveness and potential of the program, and that external factors or the condition's natural progression may partially explain the changes observed on the ADL-H scale and CIR scale.

The ADL-H scores used in this study were completed by the case manager together with the clients. The case manager conducted an in-home assessment at baseline and again approximately six months later to help inform scoring. Similarly, the CIR scores were completed by the referral source as part of the program's referral form, and again at the six-month time frame by the case manager, which is a limitation due to the data coming from two different sources. While these approaches reduce the limitations of traditional self-report, future research could strengthen measurement validity by incorporating independent evaluators.

Another limitation of this study is that it did not include a formal measure of housing stability (e.g., relating to clients' units passing fire or housing inspections after the intervention). Despite this limitation, it is important to note that none of the participants in this study have lost their homes due to hoarding after joining the program. Future research should aim to include structured follow-up with housing providers or administrative records to better assess the impact of interventions on tenancy preservation.

Building on the success of the BIT group in reducing hoarding symptoms (Frost et al., 2011; Frost et al., 2012; Mathews et al., 2016) and the growing need for effective hoarding

interventions, there is a clear implication in evaluating the BIT group's effectiveness with a larger group of clients that includes a comparison group of clients receiving only case management.

In addition to symptom reduction, previous research suggests that group cognitive behavioral treatments reduce social isolation and stigma associated with having a hoarding disorder (Muroff et al., 2009). As such, the BIT group may play an important role in normalizing hoarding behaviors and creating a comfortable space to work towards reducing them.

Overall, ongoing training for professionals in CBT techniques and hoarding interventions is essential to continue improving the activities of daily living, living conditions and safety issues of those who are at risk of losing their housing due to hoarding. In addition to the reported findings regarding the program's overall effectiveness, the value of the BIT group as a form of peer support should also be considered.

The Anxiety & Depression Association of America (ADAA) (n.d.) suggests that there is a high rate of co-morbidity with hoarding disorder, something that was also seen among the clients of the program. Given these high rates of comorbidity and the improvement observed through this program, it's crucial to consider that a combination of one-on-one case management support with a group intervention may have potential for both hoarding and co-morbid mental health disorders.

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