Clinical Social Work Journal
https://doi.org/10.1007/s10615-024-00972-9

ORIGINAL PAPER

Managing Severe Hoarding in Non-voluntary Clients: A 2-years Follow-up Comparative Study of Three Different Approaches

David Córcoles[1,2,3] · Lucía Guerrero[4] · Ruben Ramos[4] · Miguel A. Jerónimo[1] · Pilar Samos[1] · Jacobo Chamorro[1] · Angeles Malagon[1,3] · Antoni Bulbena[1,3] · Luis Miguel Martín[1,2,3] · Victor Pérez[1,2] · Anna Mane[1,2,5]

Accepted: 31 October 2024

Abstract

The management of severe hoarding is often highly challenging due to lack of collaboration and the need to coordinate a large team of professionals. Although numerous strategies have been developed to manage severe hoarding, the most effective approach has not been established. To evaluate and compare three different approaches to the management of severe hoarding in non-voluntary clients. Naturalistic study of clients treated involuntarily by a Crisis Resolution Home Treatment (CRHT) team for severe hoarding. Three management strategies were compared: (1) case management approach with full and part-time staff (HLH), (2) case management approach based on interprofessional networking collaboration (ICN), and (3) routine social service care with non-specific hoarding management led by a social worker (RSW). The Clutter Image Rating scale (CIR) was used to assess hoarding severity at baseline and at 6-, 12-, and 24-months. The main outcome measure was "case resolution" (CIR score < 4). Of the 271 cases referred to the CRHT, 214 completed all follow-up measures. Resolution was achieved in 84.5%, 36.6%, and 36.4% of cases managed by the HLH, RSW, and ICN strategies, respectively ($p < 0.001$). The HLH strategy resulted in the greatest improvement in hoarding behaviour. In this study, the most effective strategy to resolve severe hoarding in non-voluntary clients was the case management approach with a full-time team. These findings suggest that centralizing case management in a team of specialized, highly autonomous professionals using a collaborative approach involving motivational interviewing could be the best strategy to resolve severe hoarding.

Keywords 2-year follow-up · Hoarding disorder · Community-based treatment · Case-management · Social work · Harm reduction

✉ David Córcoles
David.Corcoles@autonoma.cat

Lucía Guerrero
lguerrero@l-h.cat

Ruben Ramos
rramos@l-h.cat

Miguel A. Jerónimo
mjeronimo@psmar.cat

Pilar Samos
psamos@psmar.cat

Jacobo Chamorro
jchamorrolopez@psmar.cat

Angeles Malagon
amalagon@psmar.cat

Antoni Bulbena
abulbena@psmar.cat

Luis Miguel Martín
lmmartin@psmar.cat

Victor Pérez
vperezsola@psmar.cat

Anna Mane
amane@psmar.cat

[1] Institut de Neuropsiquiatria i Addiccions, Parc de Salut Mar. Passeig Marítim de la Barceloneta 25-29, Barcelona 08003, España

[2] Centro de Investigación Biomédica en Red de Salud Mental (CIBERSAM), Av. Monforte de Lemos, 3-5. Pabellón 11. Planta 0, Madrid 28029, España

[3] Departmento de Psiquiatría y Medicina Forense, Universitat Autonoma de Barcelona, Campus de la UAB, Plaça Cívica, Bellaterra, Barcelona 08193, España

[4] Servei de Salut de l' Ajuntament de L'Hospitalet, Hospitalet de Llobregat, Barcelona, Spain

[5] Fundació Hospital del Mar Medical Research Institute (IMIM), Carrer del Dr. Aiguader, 88, Barcelona 08003, Spain

Published online: 27 November 2024

Introduction

Hoarding behaviour has been associated with multiple diseases such as hoarding disorder, cognitive impairment, psychotic disorder, alcohol use disorder, personality disorder, and obsessive-compulsive disorder (Córcoles et al., 2023). Hoarding disorder is characterized by a persistent difficulty in parting with possessions, regardless of their actual value, due to a perceived need to save the items, which is, at least partially caused by the distress associated with discarding those items. Consequently, hoarding leads to substantial clutter in the living areas of the home, which may compromise the intended use of these areas. In turn, this can lead to clinically-significant distress and/or impairment in social, occupational, or other important areas of functioning (including maintaining a safe environment) (American Psychiatric Association, 2013). Hoarding disorder is a chronic condition that tends to worsen over time (Ayers et al., 2010). According to a recent systematic review and meta-analysis, the prevalence of hoarding in the general population ranges from 2–4%(Postlethwaite et al., 2019). Although several treatments, both psychological and pharmacological, have been developed for the treatment of hoarding, these have only limited efficacy and are not always available. Cognitive-behavioural therapy (CBT) appears to be the most effective, evidence-based treatment, with reported rates of clinically-significant improvement ranging from 21 to 68% (Bodryzlova et al., 2019; Tolin et al., 2015). Several pharmacological treatments are also available, but the evidence to support these treatments remains limited due to the large number of the medications studied, small sample sizes, and a lack of replication (Brakoulias et al., 2015; Piacentino et al., 2019).

An important barrier to achieving satisfactory treatment outcomes is that many individuals with hoarding disorder only seek help due to family or community pressure (Kwok et al., 2018), and up to 40% of clients refuse to collaborate (Bratiotis et al., 2021; Frost et al., 2000; Kysow et al., 2020). Due to this situation, severe hoarding is not uncommon. This is important given that severe hoarding can have major negative consequences for the client and the community, including family members, neighbours, and the local community due to the risk of fire, pest infestation, falls and other medical complications, and eviction (Bratiotis & Woody, 2020; Córcoles et al., 2023; Lucini et al., 2009).

The management of severe hoarding is often highly complex, requiring the intervention of specialists from various disciplines, including social work, mental health, primary care, legal services, and cleaning services (Bratiotis, 2013, 2020; Haighton et al., 2023; Koenig et al., 2013; Porter & Hanson, 2022). Moreover, even with the involvement of a team of specialists, achieving resolution may take several months (Kwok et al., 2018; Kysow et al., 2020; McGuire et al., 2013). In fact, in cases involving non-adherent clients with severe hoarding behaviour, court intervention may be required (Kwok et al., 2018; Kysow et al., 2020).

A wide range of approaches have been developed to manage severe hoarding. In many countries, the preferred approach is a community-based strategy (Bratiotis, 2013; Choo et al., 2015; Kysow et al., 2020). Other approaches include the case management approach proposed by Bratiotis et al. based on the findings of their qualitative study (Bratiotis et al., 2019). Other strategies, such as community task forces, interprofessional partnerships, have also been described (Bodryzlova et al., 2020; Bratiotis, 2013; Vaingankar et al., 2021). Although numerous studies have been carried out to date to evaluate the management of hoarding, none of those studies have used objective quantitative measures to compare the interventions. Consequently, the most effective approach has not been established.

In most cases, hoarding interventions are led by a social work team, which serves as a liaison between the client and the health care system and community. The available data show that a good, fluid coordination among different services could shorten the time to resolution. In severe cases, a positive relationship and mutual collaboration with the client appears to be crucial (Bratiotis et al., 2019; Kysow et al., 2020). In individuals who refuse to collaborate and/or present a high risk of complications, some authors have suggested that harm reduction should be prioritized since eliminating the hoarding behaviour may be more difficult or even impossible (Bratiotis et al., 2019; Kysow et al., 2020). In this regard, motivational interviewing, a tool commonly used in the treatment of substance use disorders (Miller & Rollnick, 2012), may be a useful component of a harm reduction approach in hoarding disorder (Tompkins, 2015). The use of motivational interviewing has demonstrated effectiveness as an additional strategy to cognitive-behavioral treatment in clients with anxiety (Westra, 2004). Although a recent study in clients with excessive acquisition did not yield positive results, this study involved a brief online motivational intervention (Wong et al., 2023). Furthermore, a recent study involving home-based interventions similar to our study strategies has indeed shown significant reductions in hoarding symptoms (Dozier & Nix, 2024).

Although the available data indicate that involuntary cleanouts are ineffective in the long-term and associated with higher rates of recidivism(Kysow et al., 2020), in some cases there is no alternative. In such cases, the aim of the cleanout is to rapidly reduce the risk of complications. While some client with severe hoarding may voluntarily consent to a cleanout, in other cases they may refuse to collaborate. In such cases, a court order may be necessary. Unfortunately,

it can take several months to obtain judicial authorization, assuming that it is even approved.

Despite the potentially severe negative consequences of hoarding, the optimal approach to managing this condition remains unclear. At present, a wide range of approaches are used, often with different team structures. Moreover, there is a clear need for objective comparative studies to compare the different approaches to managing reluctant clients with severe hoarding in order to determine their relative efficacy.

Aims

1. Evaluate and compare the effectiveness of three different management strategies for severe hoarding in less collaborative clients in Barcelona.
2. Identify the intervention aspects most closely associated with successful case resolution.

To achieve this, we conducted a prospective, two-year follow-up study involving three distinct community-based hoarding management strategies in clients who were non-compliant with the intervention.

Research Questions.

3. Which management strategy leads to the greatest improvement in hoarding behavior?
4. How effective are the three different management strategies in resolving severe hoarding in less collaborative clients?
5. What specific strategies in community-based hoarding management services contribute to effective hoarding resolution?

Table 1 Characteristics of the 3 different strategies

	HLH	ICN	RSW
Multidisciplinary team	Yes	Yes	No
Case management structure	Yes	Yes	No
Social worker leading the intervention	Yes	Yes	Yes
Full time dedication professional	Yes	No	No
Hoarding managing protocol	Yes	Yes	No
Use of motivational interviewing	Yes	No	No
Regular scheduled meetings	No	Yes	No
Part time legal team	Yes	No	No
Intervention plan	Yes	Yes	No
Collaborative agreement with client	Yes	No	No
Pre-established budget management	Yes	No	No

HLH, Hospitalet de Llobregat Hoarding team; ICN, Interprofessional Collaboration Networking; RSW, Routine Social Work

Methods

Study Design

This was a naturalistic, two-year prospective follow-up study to compare three different hoarding management strategies.

Sample

We included clients referred to the Crisis Resolution Home Treatment team (CRHT) from 2013 to 2020 by one of three different community-based services in the province of Barcelona, Spain: (1) the Hospitalet de Llobregat Hoarding team (HLH), (2) the Interprofessional Collaboration Network (ICN) in the Sant Marti neighbourhood of Barcelona city, and (3) Routine Social Work (RSW) in the city of Barcelona (excluding the Sant Marti area). All three of these hoarding management strategies, are non-profit and form part of the Spanish National Health System. A summary of the key similarities and differences for each approach is presented in Table 1.

The role of the social worker remains consistent across the three strategies for non-adherent clients. In these studied approaches, it is the social worker who takes the lead in interventions and case management. They assess the severity of hoarding behavior, considering its impact on daily life and health. Social workers collaborate with other agencies and professionals, serving as a bridge between clients and the healthcare system (including the CRHT) and community to address the challenges posed by hoarding. Additionally, they regularly follow up to monitor progress and address setbacks. In the particular cases under examination, where client involvement in treatment was minimal or absent, the CRHT team played a secondary role. The sole feasible intervention in such instances was either harm reduction or cleanout.

HLH

The HLH was created in 2009 to manage hoarding clients in Hospitalet de Llobregat, a city that borders Barcelona. The HLH team is comprised of a full-time social worker, a part-time environmental health inspector, and a part-time lawyer. When necessary, the HLH collaborates with other professionals, including an animal health inspector, the police department, fire prevention services, and sanitation services.

ICN

The ICN serves the Sant Marti neighborhood of Barcelona. It was created in 2018 to manage hoarding situations. This strategy involves collaboration among a wide range of professionals from different areas, including social workers, lawyers, animal control, the police department, environmental health, psychologists, and risk prevention. A CRHT member takes part in the ICN meetings. The management of cases is conducted through regular meetings (typically held every 2–3 months) involving all members of the ICN. Each member allocates a portion of their workday to the ICN, although none have full-time dedication to it.

RSW

The RSW in Barcelona city does not have a specific hoarding team or established managing protocol. The social worker leading the intervention is a generalist, serving a diverse range of clients in the public adult sector. In cases involving hoarding, the social worker collaborates with healthcare professionals from various domains as needed. These collaborations occur on an ad hoc basis, without any predefined collaborative agreements.

The HLH works directly with the client to develop the intervention plan, with specific objectives in a suitable timeframe that meet the needs of both the client and the community. By contrast, the social worker leading the ICN team works directly with the client in accordance with the previously established plan created by the professionals at the ICN meeting. The client is not consulted in terms of specific objectives or timing. The social worker leading the RSW team does not follow any predetermined plan for the intervention, but rather uses his/her professional judgement as how to best proceed.

The local governments guarantee an equitable distribution of the budget for expenses related to hoarding management. In the case of HLH, agile communication channels and management of financial resources have been preestablished with the organizations responsible for budget management. By contrast, no such channels for requesting financial resources are available for the ICN and RSW.

Crisis Resolution Home Treatment Team

The CRHT is staffed by two psychiatrists and two nurses. The CRHT is a specialized team created to manage non-collaborative clients who are not included in the psychiatric health network, either because they had no prior diagnosis or had dropped out of usual care. Similarly, in non-collaborative cases, the community-based treatment team (HLH, ICN, RSW) can request assistance from the CRHT. After referral, the CRHT generally performs the first home visit together with the community team. At this visit, the diagnosis is established and home monitoring is carried out until the client's condition has been stabilized. A CRHT psychiatrist (D.C.) provided onsite clinical training and consultation to the three different hoarding management teams, which helped to ensure fluid communication channels between the community-based hoarding service and the CRHT.

In severe hoarding cases, with a high risk of complications and lack of cooperation, a cleanout may be required. However, according to law, the client must be informed of the decision to perform an involuntary cleanout and they must also be given the opportunity to do it themselves, with or without external help. In extreme cases where the client completely refuses to cooperate, a court order is required.

Inclusion Criteria

Two inclusion criteria must be present for CRHT to accept a case: (1) client refusal to cooperate with the social service team, and (2) the CRHT and community-based team must jointly agree that the severity of the hoarding behaviour presents a high risk of complications for the individual and/or the community.

Data Collected

Hoarding severity was assessed through in situ home visits using the Clutter Image Rating scale (CIR) (Frost et al., 2008) during the first home visit and at then at 6-, 12- and 24-months. The Clutter Image Rating Scale relies on nine objective photographs taken of each room (including the kitchen, living room, and dining room). In each room, the severity of clutter is assessed on a scale ranging from 1 (minimal) to 9 (severe). This approach enables an unbiased, visual evaluation of clutter severity. The final score is calculated as the average score across the three rooms. The CIR scale was selected because it is easy to use and does not require client collaboration.

The following sociodemographic and clinical data were assessed: age; sex; living situation; social network; psychiatric history; previous hospital admission; intervention team (HLH, ICN or RSW); duration of hoarding (in months); harm reduction approach; cleanout intervention; court-ordered intervention; and time until resolution (months).

The following instruments were administered to assess the functional and psychopathological characteristics of the study participants: Severity of Psychiatric Illness Scale (SPI) (Bulbena et al., 1997), Global Assessment of Functioning Scale (GAF) (American Psychiatric Association, 2000), and the Clinical Global Impression-Severity Scale (CGI-S) (Guy, 1976).

Case Resolution

The case was considered to be resolved when the CIR score was <4, which indicates the absence of significant clutter requiring clinical care (Frost et al., 2008).

Ethics

The project was approved by the ethics committee at the Parc de Salut Mar Hospital (number 2020/9414). The study adhered to all national and international guidelines and to the tenets of the Declaration of Helsinki. Data confidentiality was ensured by following the legal provisions of the "Organic Law 3/2018, of December 5, on the Protection of Personal Data and guarantee of digital rights, and Regulation (EU) 2016/679 of the European Parliament and of the Council of April 27, 2016 on Data Protection (GDPR)".

Statistical Analysis

A descriptive analysis of the study participants was performed at baseline. Next, a univariate analysis was carried out to compare the three hoarding management strategies. For quantitative data, to assess whether there are differences among three groups, we first conduct a global analysis using ANOVA and the Kruskal-Wallis test. Subsequently, if significant differences were observed in the previous tests, we proceed to analyze whether there are specific significant differences between each pair of groups (HLH vs. ICN, HLH vs. RSW, and ICN vs. RSW). This second analysis is carried out using either the Bonferroni correction or the Dunn-Bonferroni correction. For non-normally distributed quantitative data that violated the assumption of homogeneity of variance, we applied a Welch's ANOVA followed by Bonferroni correction as a post-hoc test. The Kruskal-Wallis test, followed by the Dunn-Bonferroni correction as a post-hoc test (Dunn, 1964), was performed if the normality test indicated that the data did not meet criteria for a parametric test but the assumption of homogeneity was not violated. Categorical data were analyzed using Chi-squared test and Fisher's exact test. We also performed a univariate analysis to compare the group of clients whose hoarding was considered resolved at the final follow-up to the group that did not achieve resolution. Finally, a binary logistic regression analysis was carried out using the "ENTER" method to examine the factors independently associated with the resolution. In this analysis, "Resolution" was the dependent variable. The independent variables were baseline CIR score (which has been associated with case resolution in previous studies (Kysow et al., 2020) and the variables that were statistically significant ($p<0.05$) on the univariate analyses. The SPSS v. 25.0 software package was used to perform the statistical analysis.

Results

Figure 1 shows the flowchart of the cases referred to the CRHT during the study period (2013–2020). Table 2 shows the baseline sociodemographic and clinical characteristics of the clients overall and according to the referring team (HLH, ICN, RSW). As that table shows, the only significant difference at baseline was the median CIR score, which was significantly higher ($p=0.002$) in the HLH group (6.2) than in the ICN (5.7) and RSW (5.3) groups.

Follow-Up

Figure 2 shows the changes in the CIR score from baseline to the 6-, 12- and 24-month follow-up points. As Table 2 shows, there were significant differences between groups in CIR scores at all four time points. The post-hoc analysis (Table 3) revealed significant differences in CIR scores between the HLH and ICN groups at 12 and 24 months ($p<0.005$) and between the HLH and RSW groups at 6, 12, and 24 months ($p<0.005$).

Resolution Rates

Of the 214 cases, 106 (49.5%) achieved resolution by the end of the study period. By strategy, resolution was achieved in 84.5% ($n=49$) of cases included in the HLH strategy, 36.6% ($n=49$) of cases in the RSW strategy, and 36.4% ($n=8$) of cases in the ICN strategy ($p<0.005$). Figure 3 shows the changes in resolution rates over the course of follow-up.

All of the statistically significant differences (Table 3, post-hoc analysis) in resolution rates between the groups were found starting at month 6. As that table shows, resolution rates in the HLH group were significantly higher ($p<0.005$) than the other strategies (ICN and RSW). Table 4 compares the clinical and sociodemographic characteristics of the clients who achieved resolution to the group that did not. On the binary logistic regression analysis (Table 5), the HLH approach was associated with a significantly greater odds of resolution compared to the ICN and RSW strategies ($p<0.001$).

Characteristics of the Interventions

Although all clients were considered reluctant to any intervention at baseline, a harm reduction approach was possible in 14.2% of the sample ($n=15$). Of the 15 clients in which

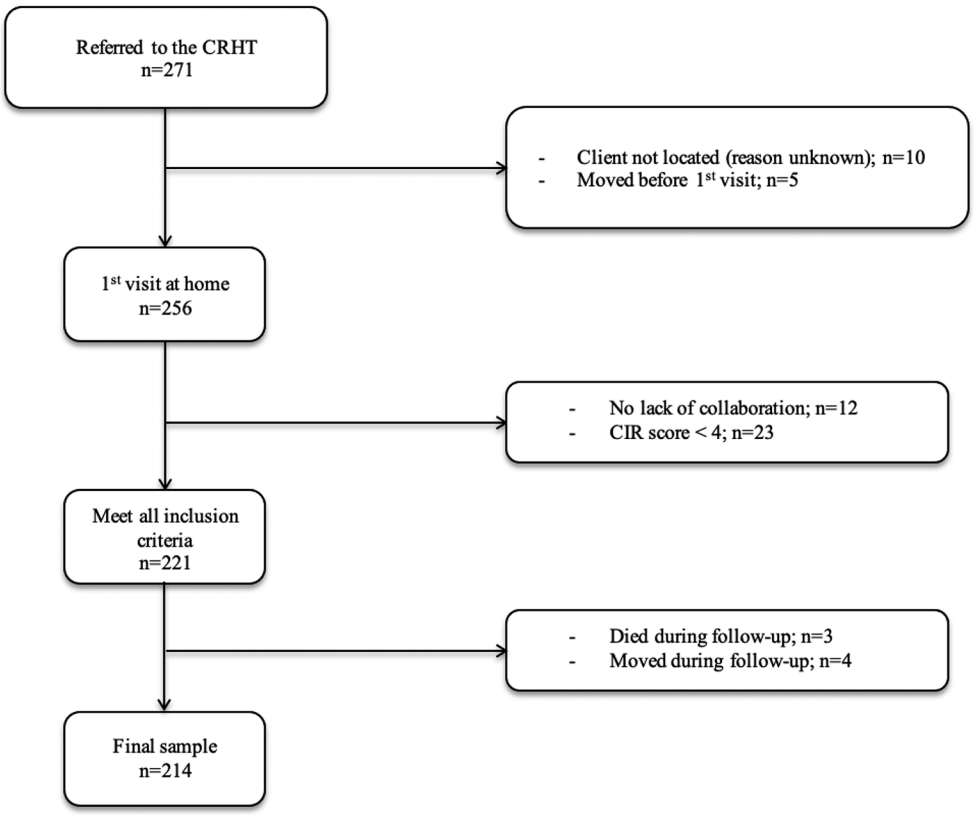

Fig. 1 Case selection flowchart. (Abbreviations: CRHT, Crisis Resolution Home Treatment team; CIR, Clutter Image Rating scale)

harm reduction was successful, most ($n=10$, 20.4%) were from the HLH group (Fisher's exact test = 3.0; $p=0.222$), with only one client (12.5%) from the ICN group and four (8.2%) from the RSW group. Cleanout was performed in 85 cases (80.2%), distributed by group as follows: HLH: 65.5% ($n=38$); RSW: 30.6% ($n=41$); and ICN: 27.3% ($n=6$) ($p<0.001$). In 14 clients, the cleanout was performed with the collaboration of the client. Of these 14 "collaborative" cleanouts, 11 (28.9%) involved clients in the HLH group (Fisher's exact test = 8.5; $p=0.015$) versus only two (4.9%) in the RSW group and one in the ICN group (16.7%). Court approval was obtained for involuntary cleanout in 28 cases, distributed as follows: 19 (50.0%) from the HLH group and 9/41 (22.0%) from the RSW group (Fisher's exact test = 9.7; $p=0.006$). Court approval was not requested in any of the six cases in the ICN group (0%).

Discusion

The present naturalistic study was conducted to determine the most effective type hoarding management intervention in non-adherent clients. Resolution was achieved in 84.5% of cases in the HLH strategy versus only 36.6% and 36.4%, respectively, of cases in the RSW and ICN strategies (Fig. 3). These findings suggest that a case management team created specifically to manage hoarding is more effective in resolving severe hoarding in uncollaborative clients than either a network collaboration approach or RSW.

The management of non-adherent clients is particularly challenging as evidenced by the partial effectiveness achieved in most interventions. Kysow et al. (Kysow et al., 2020) achieved resolution in 65% of cases, which is slightly higher than the resolution rate in our sample (49.5%). However, those authors included both collaborative and non-collaborative clients, whereas we only included non-collaborative clients, which generally have worse outcomes.

There are many different possible approaches to the management of hoarding. Some studies suggest that case management is the most appropriate strategy (Bratiotis et al., 2019; Kysow et al., 2020). In the present study, we evaluated two different case management strategies, one of which had a full time, dedicated team (HLH) and one with only a part-time team (ICN). Perhaps not surprisingly, the full-time case management approach (HLH) was more effective, as evidenced by the difference in case resolution rates (84.5% vs. 36.4%). This finding supports the case management strategy led by a full-time team, but the exact components and design of this approach can vary. For example, the case management strategy described by Kysow et al. in Vancouver, Canada(Kysow et al., 2020) was similar—but not exactly the same—to our HLH team, but the results achieved by both teams were comparable. Perhaps the most notable characteristic shared by both teams was the

Table 2 Sociodemographic and clinical characteristics of the overall sample and differences between the three groups (HLH, ICN, RSW)

	Total ($n=214$)		HLH ($n=58$)		ICN ($n=22$)		RSW ($n=134$)		
	n	%	*n*	%	*n*	%	*n*	%	*p*
Sex,n (%)[a]									0.554
Male	100	46.7	29	50.0	12	54.5	59	44.0	
Female	114	53.3	29	50.0	10	45.5	75	56.0	
Age,mean (SD)[b]	63.7	14.1	63.3	12.7	62.6	11.5	64.1	15.0	0.876
Living situation, n (%)[a]									0.305
Alone	115	53.7	32	55.2	15	68.2	68	50.7	
Accompanied	99	46.3	26	44.8	7	31.8	66	49.3	
Social network, n (%)[a]									0.343
Null/Limited	177	90.3	49	92.5	18	81.8	110	90.9	
Normal	19	9.7	4	7.5	4	18.2	11	9.1	
Psychiatric history,n (%)[a]									0.560
No	95	44.4	24	41.4	8	36.4	63	47	
Yes	119	55.6	34	58.6	14	63.6	71	53	
Previous hospital admission, n (%)[a]									0.298
No	189	88.3	50	86.2	20	90.9	119	88.8	
Yes	21	9.8	5	8.6	2	9.1	14	10.4	
Unknown	4	1.9	3	5.2	0	0	1	0.7	
CGI score, mean (SD)[d]	4.8	1.2	4.8	1.4	5.1	0.8	4.8	1.1	0.447
GAF score, median (IQR)[c]	40.0	20.0	40.0	23.0	40.0	20.0	40.0	20.0	0.818
SPI total score, mean (SD)[b]	14.2	4.7	13.5	5.1	14.5	5.8	14.5	4.4	0.402
Duration of hoarding (months), median (IQR)[c]	120	168	120	180	168	129	120	120	0.102
CIR (baseline), median (IQR)[c]	5.7	2.1	6.2	2.1	5.7	2.4	5.3	1.7	**0.002**
CIR (6 months), mean (SD)[d]	4.3	2.4	3.4	2.8	4.7	2.2	4.6	2.1	**0.004**
CIR (12 months), median (IQR)[c]	4.0	4.7	1.0	2.8	5.0	5.1	4.7	3.7	**<0.001**
CIR (24 months), median (IQR)[c]	3.3	4.7	1.0	1.8	5.0	5.3	4.5	3.7	**<0.001**
Resolution, n (%)[a]									**<0.001**
No	108	50.5	9	15.5	14	63.6	85	63.4	
Yes	106	49.5	49	84.5	8	36.4	49	36.6	
Time to resolution (months), mean (SD)[4d]	14.7	10.0	7.9	8.1	17.4	9.2	17.2	9.5	**<0.001**

Abbreviations: HLH, Hospitalet de Llobregat Hoarding team; ICN, Interprofessional Collaboration Networking; RSW, Routine Social Work; CGI-S, Clinical Global Impression–Severity Scale; GAF, Global Assessment of Functioning scale; SPI, Severity of Psychiatric Illness scale; SD, standard deviation; IQR, interquartile range

[a]Chi-squared test (n, %);[b]ANOVA test (mean, SD);[c]Kruskal–Wallis test (median, IQR);[d]Welch's ANOVA (mean, SD);[e]Fisher's exact test (n, %)

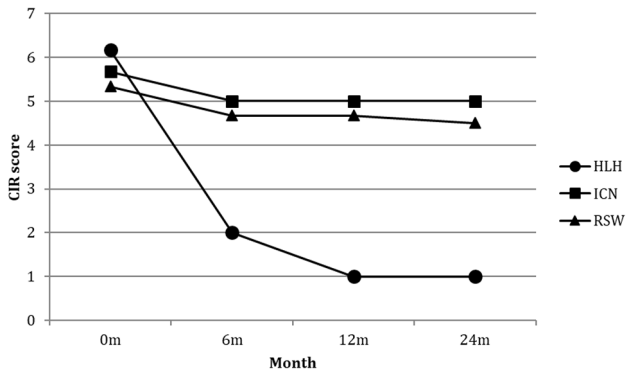

Fig. 2 Changes in Clutter Image Rating scale scores over time for each strategy (HLH, ICN, RSW). (Abbreviations: CIR, Clutter Image Rating scale; HLH, Hospitalet de Llobregat Hoarding team; ICN, Interprofesional Collaboration Networking; RSW, Routine Social Work)

inclusion of at least one full-time worker. This is important given that centralizing management and leadership in a single team instead of multiple consultants leads to a better understanding of the individual case and thus a better ability to foresee and manage difficulties that may arise during follow-up, which is especially important given the many challenges of managing severe cases (Bodryzlova et al., 2020; Lacombe & Cossette, 2018). Both approaches attempt to establish a collaborative working alliance between the team and the client, with the team serving as a liaison with the family, community and other health care or social workers. This capacity of the team to act as an intermediary between the client and their environment, while also being able to address other client needs, is crucial, as it promotes a positive relationship, thereby further strengthening the collaboration between the team and client and increasing client motivation for change.

Table 3 Post-hoc analysis comparing differences between groups

	HLH vs. ICN			HLH-RSW				ICN-RSW			
	I-Rj	Standard error	*p*	I-Rj	Standard error		*p*	I-Rj	Standard error		*p*
CIR at baseline[a]	-26.36	15.45	0.264	-34.87	9.70		**0.001**	-8.51	14.19		> 0.999
CIR at 6 months[b]	-1.30	0.58	0.078	-1.17	0.36		**0.005**	0.13	0.53		> 0.999
CIR at 12 months[a]	-50.10	15.28	**< 0.001**	-42.23	9.59		**0.003**	-7.86	14.04		> 0.999
CIR at 24 months[a]	-52.69	15.23	**0.002**	-46.39	9.56		**< 0.001**	-6.30	13.99		> 0.999
Time to resolution, months[b]	-9.57	2.32	**< 0.001**	-9.30	1.43		**< 0.001**	0.26	2.13		> 0.999
	RR	**95% CI RR**		**RR**	**95% CI RR**		**p**	**RR**	**95% CI RR**		**p**
		lower	**upper**		**lower**	**upper**			**lower**	**upper**	
Resolution at 6 months	6.46	2.08	20.09	4.80	2.48	9.28	**< 0.001**	0.74	0.26	2.16	0.584
Resolution at 12 months	10.29	3.33	31.73	9.18	4.26	19.81	**< 0.001**	0.89	0.34	2.34	0.818
Resolution at 24 months	9.53	3.10	29.27	9.44	4.27	20.87	**< 0.001**	0.99	0.39	2.53	0.985

Abbreviations: HLH (Hospitalet de Llobregat Hoarding team), ICN (Interprofessional Collaboration Networking), RSW (Routine Social Work), RR (Relative Risk)

[a]Kurskal-Wallis– Bonferroni, mean rank difference (Ri-Rj), [b]Welch's ANOVA (Bonferroni), mean difference (i-j)

One of the major advantages of the HLH approach over the ICN and RSW strategies is the use of motivational interviewing, a goal-oriented, client-centered counselling style designed to stimulate the client's intrinsic motivation in order to encourage behaviour change. This technique follows four broad guiding principles: express empathy, develop discrepancy, roll with resistance, and support self-efficacy (Miller & Rollnick, 2012). The use of motivational interviewing to promote change in this client cohort could explain the greater proportion of harm reduction interventions and higher percentage of collaborative cleanouts in the HLH group, as this technique helped the team to reach agreement with the client on specific goals and time frames (Kysow et al., 2020).

In severe hoarding cases, shortening the time to resolution can be crucial to prevent problems and complications directly related to the accumulation of possessions. In this regard, it is worth noting that, in urgent cases with a risk of complications, both the Vancouver team (Kysow et al., 2020) and the HLH team achieved similar resolution times (40.6 vs. 31.6 weeks, respectively). By contrast, resolution time was much longer (68 weeks) in the ICN and RSW groups. However, steps can be taken to significantly reduce the time to resolution, such as anticipating potential difficulties, pre-establishing agreements with other services (e.g., legal services, sanitation, temporary shelters, etc.), involving the family, and by having in place agreements to with financial resource allocators to rapidly obtain funds when necessary.

Cleanout

Although comprehensive cleanouts are generally not recommended, in certain severe cases in which collaboration is minimal or non-existent, it may be the only alternative (Kim et al., 2001). In Spain, such cases require court approval due to the involuntary nature of the procedure. In this regard, having easy access to an experienced lawyer can speed up the process and increase the likelihood of approval. Importantly, the HLH team has ready access to a lawyer, which greatly facilitates the team's capacity to rapidly prepare and present a comprehensive file to the judicial system to demonstrate the severity of the case and the actions needed to resolve the situation.

Why has the ICN Not Worked?

The ICN and RSW strategies yielded similar results in terms of resolution rates (both around 36%), even though we had expected the ICN strategy (which is a case management approach) to be more effective. During the ICN meetings, we (the study authors) identified certain problems that

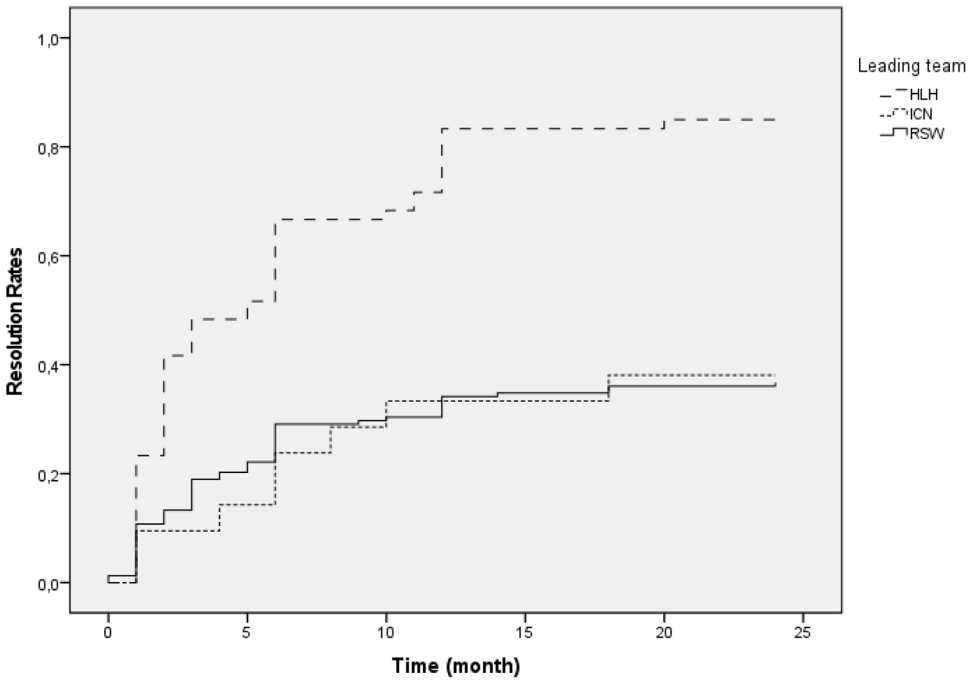

Fig. 3 Cumulative resolution rates by group (HLH, ICN, RSW) over the 24-month follow-up period. (Abbreviations: HLH, Hospitalet de Llobregat Hoarding team; ICN, Interprofessional Collaboration Networking; RSW, Routine Social Work)

Table 4 Comparison of sociodemographic and clinical variables according to resolution outcome (successful or not)

	No resolution ($n=108$)		Resolution ($n=106$)		
	n	%	*n*	%	*p*
Sex, n (%)[a]					0.214
Male	55	55.0	45	45.0	
Female	53	46.5	61	53.5	
Age[b], mean (SD)	62.6	13.8	64.8	14.3	0.257
Living situation, n (%)[a]					0.098
Alone	56	56.6	43	43.4	
Accompanied	52	45.2	63	54.8	
Social network, n (%)[a]					0.082
Null/Limited	93	52.5	84	47.5	
Normal	6	31.6	13	68.4	
Psychiatric History, n (%)[a]					0.572
No	50	52.6	45	47.4	
Yes	58	48.7	61	51.3	
Team leading the intervention, n (%)[a]					**<0.001**
HLH	9	15.5	49	84.5	
ICN	14	63.6	8	36.4	
RSW	85	63.4	49	36.6	
CIR (baseline score), median (IQR)[c]	5.7	1.92	5.7	2.33	0.580
Duration of hoarding (months), median (IQR)[c]	144	120	120	180	**0.003**
CGI-S, median (IQR)[c]	5	1	5	2	0.114
GAF, median (IQR)[c]	40	20	40	20	0.119
SPI, mean (SD)[b]	14.0	4.33	14.5	5.12	0.467

Abbreviations: HLH, Hospitalet de Llobregat Hoarding team; ICN, Interprofessional Collaboration Networking; RSW, Routine Social Work; CGI-S, Clinical Global Impression-Severity Scale; GAF, Global Assessment of Functioning scale; SPI, Severity of Psychiatric Illness scale; CIR, Clutter Image Rating scale

aChi-square test; bStudent's t-test; cMann–Whitney U test

Table 5 Binary logistic regression ($n = 214$)

	Beta	SE	OR	95% CI for OR		*P* value
				Low	High	
Baseline CIR score	0.004	0.112	1.004	0.805	1.251	0.974
Leading service						
HLH (reference group)						<0.001
ICN	-2.843	0.670	0.058	0.016	0.217	< 0.001
RSW	-2.392	0.459	0.091	0.037	0.225	< 0.001
Duration of hoarding	-0.002	0.001	0.998	0.995	1.000	0.067
Constant	2.264	0.816	9.618			0.006

Abbreviations: HLH, Hospitalet de Llobregat Hoarding team; ICN, Interprofessional Collaboration Networking; RSW, Routine Social Work; OR, odds ratio; SE, standard error; CI, confidence interval

either delayed or prevented case resolution. One example was the failure to prepare for common difficulties and complications, which led to the postponement of some interventions and a need to reassess the case to decide how to proceed. Additionally, any changes in the intervention had to be approved by other team members at the next meeting, further delaying resolution. Another problem was that even though the intervention plan was jointly developed after the first home visit, there was no pre-established pathway to request legal services and financial resources, which further delayed decision-making. Finally, although the harm reduction approach was considered in a few cases, collaboration from the client and the social environment was often absent.

Strengths and Limitations

The present study has several limitations. First, the naturalistic study design could introduce bias, such as baseline differences between the three groups or assessment-related bias. The only significant between-group difference at baseline was a higher CIR score in the HLH group, indicating more severe hoarding in that group. Even so, that difference had no influence on outcomes, as it was precisely the HLH group that achieved the highest resolution rate. We sought to minimize potential assessment-related bias by applying objective measures (e.g., the CIR) to assess hoarding. Another potential limitation, which is attributable to the initial lack of client collaboration, was the use of hoarding severity (CIR score) in the household as the main outcome measure. Another limitation is that we had to exclude a key variable—the number of visits—from the analysis due to missing data from all three teams. This is unfortunate because the available data from other studies (Kysow et al., 2020), considered together with the outcomes in the HLH group, suggest that the number of visits is associated with better client outcomes. An analysis using partial data (92 individuals, 43.0% of the sample) estimated average visit numbers during the follow-up period: 4.2 (SD:3.4) for HLH, 3.2 (SD: 2.9) for ICN, and 2.9 (SD: 3.1) for RSW ($p < 0.001$). These findings are consistent with the results from the Kysow study (Kysow et al., 2020) and would suggest that a higher number of visits may lead to a better outcome. However, it is essential to exercise caution in their interpretation due to the potential presence of selection bias, which may impact their validity.

Another limitation that could affect the reliability of the study conclusions is the difference in the number of clients in each group, particularly the limited number of participants in ICN group ($n = 22$). Finally, given that this study included only individuals reluctant to any intervention with severe hoarding, these results cannot be generalized to other client populations (i.e., those who are more cooperative or with less severe hoarding).

Despite these limitations, the study has several important strengths, including the prospective design, large sample size ($n = 214$), and numerous variables from clients treated in a real-world setting. Another strength is the comparison of three different hoarding management strategies. Another strength is that, despite the limitations of a naturalistic longitudinal study, this design more realistically and critically reflects the interventions that have been implemented in the community and these results can probably be generalized to this specific population (i.e., non-adherent clients with severe hoarding behaviour) in the real world.

Conclusions

The results of this study suggest that centralizing the management of hoarding in a specialized team dedicated exclusively to the management of hoarding in clients with lack of collaboration is more effective than interventions led by non-specialized teams or part-time teams. Furthermore, a centralized team with greater autonomy could significantly reduce the time to resolution, thus improving outcomes while potentially reduces costs. Given the wide range of factors that could potentially influence the outcomes of hoarding interventions, it is clear that more studies are needed to confirm our findings. It would also be beneficial to compare these (and other strategies) more in-depth. Nevertheless,

we believe the findings of this study strongly suggest that a dedicated team of specialists could improve outcomes and reduce costs.

The results of the research show that a collaborative approach and MI can help clinical social workers effectively engage clients, boost their motivation for change, and address ambivalence in situations like hoarding and poor collaboration. This can help improve autonomy, empowerment, and management of hoarding situations within the patient's own context, in collaboration with the social worker, rather than through an imposed, non-voluntary decision. Finally, the findings of this study may help policymakers to offer more targeted, cost-effective services to better manage hoarding.

Funding Open Access Funding provided by Universitat Autonoma de Barcelona. This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Declarations

Competing Interests The authors declare that they have no conflict of interest.

References

American Psychiatric Association (2000). Diagnostic and statistical Manual of Mental disorders, Fourth Edition, text revision (DSM-IV-TR) (1). *American Psychiatric Association*. https://doi.org/10.1176/appi.books.9780890423349

American Psychiatric Association. (2013). *Diagnostic and statistical Manual of Mental disorders*. American Psychiatric Association. https://doi.org/10.1176/appi.books.9780890425596

Ayers, C. R., Saxena, S., Golshan, S., & Wetherell, J. L. (2010). Age at onset and clinical features of late life compulsive hoarding. *International Journal of Geriatric Psychiatry*, *25*(2), 142–149. https://doi.org/10.1002/gps.2310

Bodryzlova, Y., Audet, J., Bergeron, K., & O'Connor, K. (2019). Group cognitive-behavioural therapy for hoarding disorder: Systematic review and meta-analysis. *Health & Social Care in the Community*, *27*(3), 517–530. https://doi.org/10.1111/hsc.12598

Bodryzlova, Y., O'Connor, K., Vallée, V., Koszegi, N., & Dupuis, M. J. (2020). Community Partnership in response to Hoarding Disorder in Montreal. *Psychiatric Services (Washington D C)*, *71*(6), 631–634. https://doi.org/10.1176/appi.ps.201900485

Brakoulias, V., Eslick, G. D., & Starcevic, V. (2015). A meta-analysis of the response of pathological hoarding to pharmacotherapy. *Psychiatry Research*, *229*(1–2), 272–276. https://doi.org/10.1016/j.psychres.2015.07.019

Bratiotis, C. (2013). Community hoarding task forces: A comparative case study of five task forces in the United States. *Health & Social Care in the Community*, *21*(3), 245–253. https://doi.org/10.1111/hsc.12010

Bratiotis, C., & Woody (2020). S. R. (Ed.), What's so complicated about hoarding? A view from the nexus of psychology and social work. *Journal of Obsessive-Compulsive and Related Disorders* 24 November 2019 100496 https://doi.org/10.1016/j.jocrd.2019.100496.

Bratiotis, C., Woody, S., & Lauster, N. (2019). Coordinated Community-based hoarding interventions: Evidence of Case Management practices. *Families in Society: The Journal of Contemporary Social Services*, *100*(1), 93–105. https://doi.org/10.1177/1044389418802450

Bratiotis, C., Muroff, J., & Lin, N. X. Y. (2021). Hoarding disorder: Development in conceptualization, intervention, and evaluation. *FOCUS*, *19*(4), 392–404. https://doi.org/10.1176/appi.focus.20210016

Bulbena, A., Pompei, S., Olle, L., & Coletas, J. (1997). Assessment of Severity of Psychiatric Illness. *Archivos De Neurobiologia*, *60*, 69–79.

Choo, K., Lee, W., How, C., & Ng, B. (2015). Hoarding in Singapore. *Singapore Medical Journal*, *59*(09), 484–487. https://doi.org/10.11622/smedj.2015131

Córcoles, D., Guerrero, L., Malagon, A., Bellsolà, M., Gonzalez, A. M., León, J., Sabaté, A., Pérez, V., Bulbena, A., Martín, L. M., & Mane, A. (2023). Hoarding behaviour: Special features and complications in real-world clinical practice. *International Journal of Psychiatry in Clinical Practice*. https://doi.org/10.1080/13651501.2023.2287755

Dozier, M. E., & Nix, C. A. (2024). Home-based motivational interviewing for late-life rural hoarding disorder: A pilot study. *Aging & Mental Health*, 1–9. https://doi.org/10.1080/13607863.2024.2394577

Dunn, O. J. (1964). Multiple comparisons using Rank sums. *Technometrics*, *6*(3), 241–252. https://doi.org/10.1080/00401706.1964.10490181

Frost, R. O., Steketee, G., & Williams, L. (2000). Hoarding: A community health problem. *Health and Social Care in the Community*, *8*(4), 229–234. https://doi.org/10.1046/j.1365-2524.2000.00245.x

Frost, R. O., Steketee, G., Tolin, D. F., & Renaud, S. (2008). Development and validation of the clutter image rating. *Journal of Psychopathology and Behavioral Assessment*, *30*(3), 193–203. https://doi.org/10.1007/s10862-007-9068-7

Guy, W. (1976). *ECDEU Assessment Manual for Psychopharmacology*. U.S. Dept.

Haighton, C., Caiazza, R., & Neave, N. (2023). In an ideal world that would be a multiagency service because you need everybody's expertise. Managing hoarding disorder: A qualitative investigation of existing procedures and practices. *PLOS ONE*, *18*(3), e0282365. https://doi.org/10.1371/journal.pone.0282365

Kim, H. J., Steketee, G., & Frost, R. O. (2001). Hoarding by Elderly people. *Health & Social Work*, *26*(3), 176–184. https://doi.org/10.1093/hsw/26.3.176

Koenig, T. L., Leiste, M. R., Spano, R., & Chapin, R. K. (2013). Multidisciplinary team perspectives on older Adult Hoarding and Mental Illness. *Journal of Elder Abuse & Neglect*, *25*(1), 56–75. https://doi.org/10.1080/08946566.2012.712856

Kwok, N., Bratiotis, C., Luu, M., Lauster, N., Kysow, K., & Woody, S. R. (2018). Examining the Role of Fire Prevention on Hoarding Response Teams: Vancouver Fire and Rescue Services as a case

study. *Fire Technology*, *54*(1), 57–73. https://doi.org/10.1007/s10694-017-0672-0

Kysow, K., Bratiotis, C., Lauster, N., & Woody, S. R. (2020). How can cities tackle hoarding? Examining an intervention program bringing together fire and health authorities in Vancouver. *Health & Social Care in the Community*, *28*(4), 1160–1169. https://doi.org/10.1111/hsc.12948

Lacombe, M. C., & Cossette, B. (2018). The Role of Public Health in the development of a collaborative agreement with rural and semi-urban partners in cases of severe domestic squalor and hoarding. *Community Mental Health Journal*, *54*(6), 766–772. https://doi.org/10.1007/s10597-017-0192-x

Lucini, G., Monk, I., & Szlatenyi, C. (2009). *An Analysis of Fire Incidents Involving Hoarding Households*.

McGuire, J. F., Kaercher, L., Park, J. M., & Storch, E. A. (2013). Hoarding in the community: A Code Enforcement and Social Service Perspective. *Journal of Social Service Research*, *39*(3), 335–344. https://doi.org/10.1080/01488376.2013.770813

Miller, W. R., & Rollnick, S. (2012). *Motivational interviewing. Helping people change* (3rd.). Guilford.

Piacentino, D., Pasquini, M., Cappelletti, S., Chetoni, C., Sani, G., & Kotzalidis, G. D. (2019). Pharmacotherapy for Hoarding Disorder: How did the picture change since its excision from OCD? *Current Neuropharmacology*, *17*(8), 808–815. https://doi.org/10.2174/1570159X17666190124153048

Porter, B., & Hanson, S. (2022). Council tenancies and hoarding behaviours: A study with a large social landlord in England. *Health & Social Care in the Community*, *30*(6), 2292–2299. https://doi.org/10.1111/hsc.13779

Postlethwaite, A., Kellett, S., & Mataix-Cols, D. (2019). Prevalence of Hoarding Disorder: A systematic review and meta-analysis. *Journal of Affective Disorders*, *256*(April), 309–316. https://doi.org/10.1016/j.jad.2019.06.004

Tolin, D. F., Frost, R. O., Steketee, G., & Muroff, J. (2015). COGNITIVE BEHAVIORAL THERAPY FOR HOARDING DISORDER: A META-ANALYSIS. *Depression and Anxiety*, *32*(3), 158–166. https://doi.org/10.1002/da.22327

Tompkins, M. A. (2015). Clinician's guide to severe hoarding. *Clinician's guide to severe hoarding*. Springer. https://doi.org/10.1007/978-1-4939-1432-6

Vaingankar, J., Chang, S., Chong, S., Samari, E., Jeyagurunathan, A., Devi, F., Wei, K., Tan, W., Chong, R., Ye, P., Lim, L., Babjee, R., & Subramaniam, M. (2021). Service providers' perspectives on hoarding management in the community in Singapore. *Singapore Medical Journal*. https://doi.org/10.11622/smedj.2021005

Westra, H. (2004). Managing resistance in cognitive behavioural therapy: The application of motivational interviewing in mixed anxiety and depression. *Cognitive Behaviour Therapy*, *33*(4), 161–175. https://doi.org/10.1080/16506070410026426

Wong, S. F., Dewar, E., Baldwin, P. A., & Grisham, J. R. (2023). Evaluating the effects of a brief motivational interviewing protocol on excessive acquisition. *Journal of Behavior Therapy and Experimental Psychiatry*, *80*, 101790. https://doi.org/10.1016/j.jbtep.2022.101790

David Corcoles has been working as a psychiatrist in a crisis resolution and home treatment team for the last 15 years