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Comparing the effect of Housing First against the Staircase Model on recovery

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Abstract

Jämförelse mellan Bostad Först och Boendetrappan avseende effekten på återhämtning
Bakgrund: Hemlöshet är ett globalt, vanligt och komplext problem. I Sverige finns det mer än 33 000 hemlösa och det existerar ingen klar lösning på problemet. Den traditionella lösningen i Sverige för att hjälpa folk ur hemlöshet har varit Boendetrappan (SM). I denna modell blir deltagare belönade med boende för nykterhet och för att följa uppsatta regler och till slut en egen lägenhet. Ett alternativ till SM är Bostad Först (HF). I HF ges lägenheter till deltagarna utan några förbehåll och sedan stöttas de med intensiva och flexibla åtgärder för att utvecklas och kunna bo kvar. **Syfte:** Vi ämnade testa om HF var överlägsen SM avseende återhämtning. **Material och Metoder:** Detta var en pretest-posttest-studie som följde 18 deltagare under 18 månader. Återhämtning som mättes med Recovery Asessment Scale (RAS) var det primära utfallet och Socialt Stöd för Återhämtning (SSR), Alcohol Use Disorder Identification Test (AUDIT) och Drug Use Disorder Identification Test (DUDIT) var de sekundära. Vi använde Wilcoxon Signed Ranks Test för att hitta statistisk signifikans i förändring av medelvärde. **Resultat:** Statistisk signifikanta förändringar visades i förändringar av återhämtning. Positivt för HF (+10.28, p=0.041) och negativt för SM (-3.00, p=0.042). Ingen signifikans visades för de sekundära utfallsmåtten. **Slutsats:** Bostad Först var överlägsen Boendetrappan avseende återhämtning för studiepopulationen.

Comparing the effect of Housing First against the Staircase Model on recovery
Introduction: Homelessness is a global, common and complex problem without a clear solution. In Sweden there are more than 33 000 homeless people and the there are no clear solution to the problem. The traditional Swedish way to bring people out of homelessness has been the Staircase Model (SM). In this model, participants first adhere to a set of rules including sobriety, and are then rewarded with housing, and, in time, their own apartment. An alternative treatment for homelessness is Housing First (HF). In HF, apartments are first given to the participants without prerequisites, followed by intensive care and support. **Aim:** We aimed to test if HF had a superior effect on recovery, compared to SM. **Materials and Methods:** This was a pretest-posttest study spanning 18 months with 18 participants. Recovery, measured with Recovery Assessment Scale (RAS) was the primary outcome and Social Support for Recovery (SSR), Alcohol Use Disorder Identification Test (AUDIT) and Drug Use Disorder Identification Test (DUDIT) were the secondary. **Results:** Statistical significant differences were ound in both the positive change of recovery for HF (+10.28, p=0.041) and the negative change for SM (-3.00, p=0.042). There was no difference found in the secondary outcomes. **Conclusions:** Housing First was superior to SM in terms of recovery for the study population.

Keywords: Homelessness, Housing First, Sweden, Stockholm, Recovery, Staircase Model

Abbreviations:

SM = the Staircase Model

HF = Housing First

ACT = Assertive Community Treatment

ICM = Intensive Case Management

HR = Harm Reduction

RAS = Recovery Assessment Scale

SSR = Social Support for Recovery

AUDIT = Alcohol Use Disorder Identification Test

DUDIT = Drug Use Disorder Identification Test

Introduction

In Europe and North America, the risk of being homeless at some point in during life is estimated between 5.6% and 13.9% (1,2). There are more than 400,000 homeless people in Europe on any given day and this number seems to be rising (3). Different countries have their own view of what it means to be homeless, making research and international communication difficult. The European Union has not yet agreed on a unified definition, even though attempts have been made (3). However, what all countries agree on is that a person who does not have a secure location to sleep is considered homeless (3).

In a Swedish report from The National Board of Health and Welfare (Socialstyrelsen) in 2017, the definition of homelessness was divided into four categories. Each category is defined by the situation the homeless individuals find themselves in. Situation 1 is defined as sleeping rough or sleeping at a shelter. Situation 2 is defined as short-term housing provided by local authorities such as support housing or correctional facility. Situation 3 is defined as long-term housing provided by local authorities where the resident are bound to follow additional rules. Situation 4 is defined as short term, non-stable, private housing, such as living with friends or family. There were also criteria for excluding certain groups, namely non-swedes without residence permit and children. The report states that there are currently more than 33,000 people in Sweden who are homeless (4). That is roughly the same as in 2011 but the distribution has changed. For example there is an increase in the group that is sleeping rough (4,5). To summarize, even though there has not been any significant rise in homelessness as a whole in Sweden during the past seven years, the situation is changing and more people are sleeping rough.

Health Among the Homeless

Homelessness is associated with an increased risk for infectious diseases, malnutrition and cardiovascular diseases (3). Perhaps as a consequence, the mortality rate among the homeless is two to five times higher compared to the general population (3), and might be even nine times higher among young individuals living in big cities (6). Furthermore, a study from the United Kingdom showed that homeless people were nine times more likely to commit suicide, three times more likely to die in traffic accidents and lived to an average of 47 years of age (7). This shows that the homeless live a radically different life in terms of risks. Not unlike the general

population, heart disease is the leading cause of death among the homeless but it is tightly followed by drug overdose and accidents (8). A study of homelessness in Stockholm concluded that the primary contributor to the increased mortality was alcohol and drug use, and that lacking a home was secondary (9). The experience of becoming homeless, however, is correlated with later intravenous drug use and Post Traumatic Stress Disorder (10,11). This indicates that homelessness might not just be an effect of other problems, but also contributes to more dangerous behavior and mental health problems. Adding to this, receiving adequate care from an open clinic might be more challenging for homeless individuals (12).

Alcoholism, Substance Abuse and Mental Health

A systematic review from 2008 by Fazel and colleagues included 29 studies and over 5,000 homeless individuals in western countries between 1979 and 2005. It showed that the prevalence of mental disorders, alcoholism and drug dependency included, varied greatly between countries and continents (13). The study estimated the over-all point prevalence of psychosis to 13%, major depression to 11%, personality disorder to 23%, alcohol dependency to 38% (52% in the 2000's) and drug dependency to 24% (14). In the general population these conditions are found with much lower prevalence. In Helsinki, the lifetime prevalence of psychosis was estimated to 3.5% (14). In Canada, one-month prevalence for major depression was estimated to 1.3% (15). In the Netherlands, point prevalence of personality disorder was estimated to 1.1% (16). One-year prevalence of alcohol use disorder in United States was estimated to 13.9% (17) and 3.9% for drug use disorder (18). To summarize, the prevalence of psychosis, major depression disorder, personality disorder and alcohol- and drug dependency are at least three times higher among the homeless compared to the general population.

In a Swedish government report from 2013, the primary reasons behind homelessness are described as largely unknown (19). Although, there are evidence indicating that individual problems with finances and relationships precede long-term homelessness (20). There are also other causes that individuals may not have direct control over, such as unemployment and inability to secure financial support (19). There are no successful preemptive interventions and no single treatment of homelessness has been proven superior. Instead, research suggests that it has to be combated from multiple angles (19).

The Staircase Model

Traditionally, co-occurring problems such as alcoholism, mental illness or substance abuse have been viewed as the primary issues for homeless people. Therefore, many countries have developed a model that attempts to treat these problems prior to providing housing. In Sweden, this guided the creation of the Staircase Model (SM). The first step in this model is to treat alcohol and substance abuse and, if the homeless individuals successfully adhere to the program rules, they are rewarded with increasing access to short-term, semi-private housing, and eventually, their own rental contract. The support housings are based on guidelines provided by social services, which are broad and open to interpretation. Because of the many different ways to implement this model, different support housings differ from each other and might allow the occasional intoxication or have rules on curfew.

Although some manage to adhere to the rules of SM, some tend to repeatedly fail and therefore never acquire an apartment (21). This occurs because this model is based on reward and punishment. That is, productive behavior, such as earned income, fewer or less severe symptoms of mental illness and sobriety, is rewarded whereas failure to do so is punished with exclusion or taking a step back in the model. The model is aimed at major issues for homeless people and the participant is conditioned to develop the tools to keep their own apartment. It is by this model that most people find their way out of homelessness in Sweden and it has helped many combat their problems with alcohol and drug abuse. However, the model is plagued by few core problems. First, in SM, homelessness is viewed as a symptom of underlying mental health problems. This might be inaccurate, because becoming homeless is associated with an increase in later problematic behaviors (13). Second, if the participants fail to stay sober they might be excluded from the program and therefore adequate housing, which is a human right recognized by the United Nations (22). Note that a participant is considered homeless by the Swedish definition during the entirety of this intervention. Third, this model has failed to reduce homelessness in Sweden (21). Other countries have their own model to battle homelessness. What most of them have in common is that there are requirements to be met for the participants, such as sobriety, before they get access to housing.

Housing First

In the 1990s, Sam Tsemberis developed Housing First (HF), an evidence- based intervention for homeless people, in New York City (23). Tsemberis recognized the human right to adequate housing as a way to start treatment for homeless people, regardless of its underlying causes. HF is designed in opposite ways to SM in that it starts by supplying an apartment, without any prerequisites. Note that after this, the participants are no longer considered homeless, according to the Swedish definition. This is followed by care and support in form of Assertive Community Treatment (ACT) and Intensive Case Management (ICM), which were originally developed to provide personalized care to patients with severe mental illness. An ACT-team consists of a multidisciplinary care unit including a psychiatrist, nurse, substance use specialist, case managers, peer support and more (24). They maintain a level of closeness to the HF participants that is similar to that provided at inpatient wards. The case managers practice ICM which means that their case load is substantially lower than the average case manager and they have a much more flexible approach to meet the participants at their own terms, allowing "consumer choice" (24). When participating in HF, one is subject to the same rules and regulations as the rest of society and HF will not take away the apartment if the landlord does not. This also means that the personnel will not report the use of drugs or alcohol to authorities but instead help the participants to manage the use. They do this by implementing Harm Reduction (HR). This is an approach to alcoholism, substance abuse and mental illness that is not focused on the symptoms but rather the potential harm it poses to the individual (25). This is radically different than the sobriety approach because the use of substances is allowed. The goal of HR is that the quality of life is not affected by the symptoms. There is compelling evidence that HR and the combination of ACT and ICM works (24,25). A systematic review of six randomized controlled trials from 2003 to 2006 found that after 6 months, participants in HF programs had more stable housing, spent less time in hospitals and in addiction treatment compared to treatment as usual. The study included homeless people with combined mental illness and addiction (26). No difference in mental health or substance use was found. There is also evidence that HF reduces the total cost of care for a homeless individual by over 50% during a 6-month period (27).

The evidence that HF is a cost-effective way to bring people with combined addiction and mental

health problems out of homelessness and keep their apartment with continued support and care are accumulating (23,26–28). Despite its promise, HF has encountered some obstacles in Stockholm. It started in 2010, expanded in 2014 and was restructured in 2016. It proved difficult for the personnel to adjust to this new approach and there was an initial a tendency to favor previous merits acquired in SM. Today, there are participants that have their apartment on a trial-basis via HF and are technically therefore still homeless. Another problem has been that the ACT-teams do not always have a psychiatrist and that they are not available at all hours, although they still manage to provide a high level of care. Given that little is known about the long-term effect of HF on recovery and parameters of addiction we aimed to provide that information.

Aim

The aim of this study was to test the hypothesis that Housing First is a superior alternative to the Staircase Model in terms of recovery. Based on non-published previous data we made the assumption that Housing First would have a positive effect on recovery and that the Staircase Model would have a negative. This study also investigated social support and alcohol and drug consumption to further compare the two models.

Materials and Methods

Design

This was a modified controlled pretest-posttest design study with two populations for comparison, one primary outcome and three secondary. HF is our exposure group and SM our control. The outcomes were assessed with self-reported questionnaires. As a reward, participants was given two vouchers, one for a convenience store and one for a movie theater ticket with a combined value of roughly 20€. Baseline was established in September- October of 2016, with a maximum of 3 months intervention, which served as the pretest because of practical reasons. Approximately 18 months passed between the two measurements.

Study Population

The two populations were selected through five different support housings and one Housing First center (Bostad Först Stockholm). The support housings were instructed to pick people who might

qualify for HF, and in Bostad Först Stockholm all residents were asked to participate. At the first measurement, most of the participants asked filled out the questionnaire, see Fig 1. At the second measurement, there was a substantial non-response, with about 50% of HF and 83% of SM failing to fill out the outcome questionnaires. At the first measurement, the participants gave contact information for future contact and in most cases the information was not enough to establish contact. From the first measurement, twenty-six people from SM and nine from HF were never asked participate in the second measurement. Some of the participants were still involved in either HF or SM and the personnel handled the second measurement. In total, the study included both pre- and post-measures from 11 individuals in HF, and 7 individuals in SM (Fig 1).

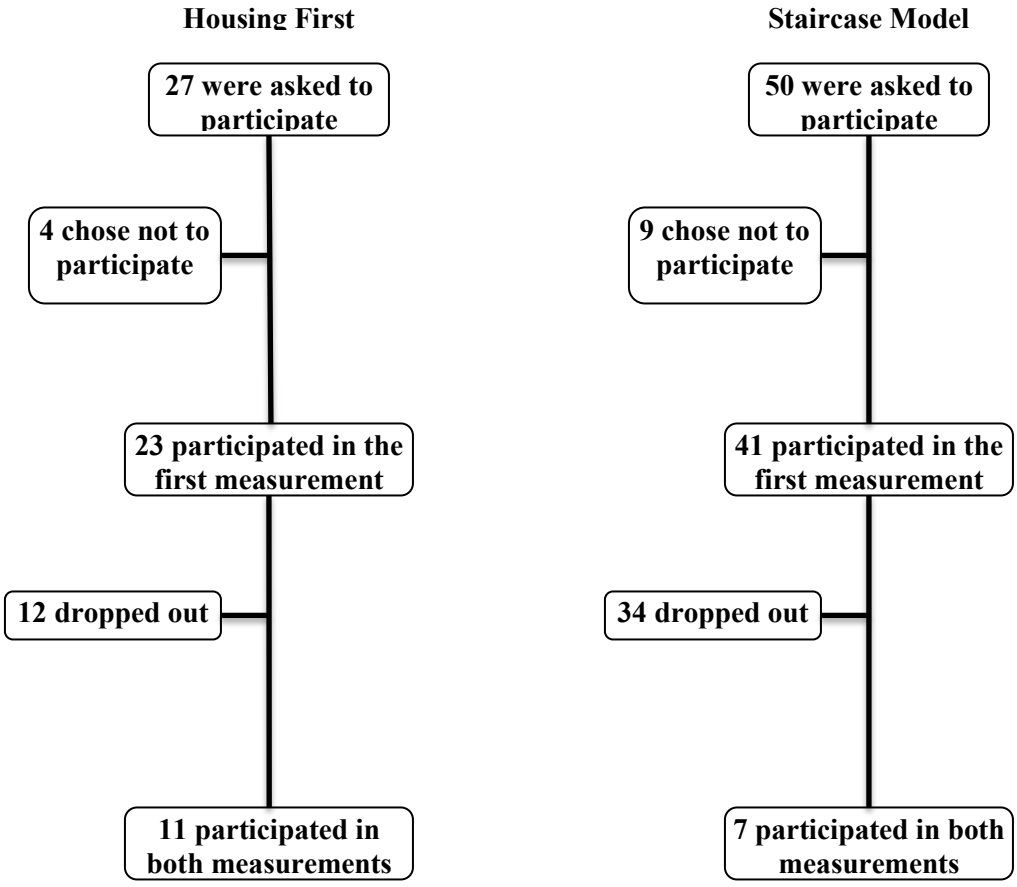

Figure 1. Flowchart illustrating participation.

Instruments

The questionnaires were filled out with the help of on-site personnel, or a researcher if the participant was no longer in HF or SM at the second measurement. Recovery is our primary outcome and the others were secondary.

Recovery

Recovery is a concept of psychological well-being, goal orientation and self sufficiency (29), which is one of the primary goals of HF. It was measured here with a slightly modified Recovery Assessment Scale (RAS). The participants rated how much they agreed with 16 statements about their well-being, for example "I have a purpose in life" or "Fear does not stop me from living the way I want to". This measurement is relatively easy to obtain and have an excellent internal validity and an estimated reliability of 0.96 (30). Each RAS item was rated on a 0 to 4 point-scale that we summed into a single scale, ranging between 0 and 64.

Social Support for Recovery

The social support in this context is estimated using Social Support for Recovery (SSR). This is a tool used in the research field of homelessness, for example in Pathways to Housing in New York City. It is similar to RAS in that the participants scored how much they agree with statements about their social situation and how the perceive their support. However, some of the statements are negative. Examples are "I get a lot of support from everyone I know" and "Nobody I know understands me". The scale was a somewhat modified version of Zimet'Multidimensional scale of Perceived Social Support assessing perceived social support showing good psychometric properties (31). It consists of 13 statements, each worth 0-3 points that are summed into a single scale ranging between 0 and 39.

Alcohol Use Disorder Identification Test

This is a widely used and reliable test. Alcohol Use Disorder Identification Test (AUDIT) is regularly used and has good psychometric quality in measuring alcohol consumption (32). It is easily obtainable and has an estimated test-retest reliability of 0.98 when testing for "alcohol-related problems" (33,34). It consists of 10 questions, each worth 0-4 points that are summed into

a single scale ranging between 0 and 40. The test indicates probable alcohol related problems at 8 points for men and 6 points for women.

Drug Use Disorder Identification Test

This is based on the same type of questions as AUDIT and is also readily used in research. The Drug Use Disorder Identification Test (DUDIT) is also easily obtainable and has a high test-retest reliability, estimated to 0.88-0.95 (35). It consists of 11 questions, each worth 0-4 points that are summed into a single scale ranging between 0 and 44. The test indicates probable drug related problems at 6 points for men and 2 points for women.

The answers on each variable are scored on a Likert Scale. The questionnaire also has questions about health, living situation, capability and social situation, enabling both current and further research on the subject. When interpreting answers that differed from the template and the intended answer were not obvious, the answer was discarded. For example, if a participant only filled out the first question of AUDIT namely "How often do you drink alcohol?" and the answer was "Never", they would have gotten 0 points on AUDIT. If they answered "4 or more times/week" with no other questions answered it would have been discarded.

Statistical Analysis

We tested the hypothesis that participants in HF would display a positive change in recovery, compared to the negative change of participants in SM. The test was supposed to be a one-tailed test with a significance level set to $p<0.05$ where we assumed normally distributed data and two-tailed version on SSR, AUDIT and DUDIT. Upon testing with Kolmogorov-Smirnov and Shapiro-Wilks test we discovered that a both RAS and AUDIT scores from autumn -16 differed significantly from the normal distribution in both tests. We decided to forego the normal distribution and instead use a non-parametric test on all variables.

We tested HF and SM separate with Wilcoxon Signed Ranks Test, checking for significance in change of mean score over time. One-tailed, because of our assumption, for RAS and two-tailed for SSR, AUDIT and DUDIT. Significance levels were kept at $p<0.05$ for all analyses.

Ethical Considerations

The questionnaires contain personal questions about sensitive information. It is important that this information is handled correctly and that the information only reaches the appropriate personnel. Giving clear instructions when handing the questionnaires to the personnel minimized the risk of confidentiality breach. The participants have been made aware of the handling of this information and have given their informed consent, securing their autonomy.

The harm that this study causes mainly consists of that the participants faced certain aspects of their social situation, addiction or mental health that they might not have been aware of. However, this is a follow-up study and all the participants in this study have already filled out the questionnaire at least once before. The harm, if any, is acceptable because this is the least invasive way to obtain the information.

In terms of benefits, this study cannot help the participants. This is of course instrumental to the design because if they could gain from certain answers the results would be skewed. Benefits for future homeless people is the whole aim of the study and the ultimate goal is to give homeless people the best chance at recovery and a meaningful role in society.

Measures to make the study as fair as possible have been made. The data is depersonalized before analysis and the conditions for filling out the questionnaire are similar for all participants. However, the questionnaire was in Swedish and personnel who might have known them selected the participants. Over all, we deemed the benefits of this study to outweigh the potential risks. Ethical permission for this study has been granted by the Regional Ethical Review Board in Stockholm (2017/835-31/1).

Results

The study population consisted of 15 men and 3 women and the age varied from 28 to 66 years old. The group from SM only had one participating woman and the participants were approximately 5 years younger on average. Mean ages and gender participation are presented in Table 1.

Table 1. Mean age and number of participating men and women.

	Housing First	Staircase Model	Total
Mean Age (years)	54.4	49.6	52.5
Participants	11	7	18
Men	9	6	15
Women	2	1	3

When comparing the mean RAS score from baseline measurements with post-intervention we found statistically significant changes in both SM and HF, see Table 2. HF displayed a positive change (10.28, p=0.041) and SM displayed a negative change (-3.00, p=0.042). The changes in mean RAS was represented in a graph, see Figure 2.

Table 2. Mean Recovery Assessment Scale scores for both measurements in both interventions. The p-values were obtained from Wilcoxon Signed Rank Test, * indicates statistical significance.

	Intervention	Autumn -16	Spring -18	p-value
Recovery Assessment Scale	Housing First	38.27	48.55	0.041*
	Staircase Model	50.67	47.67	0.042*

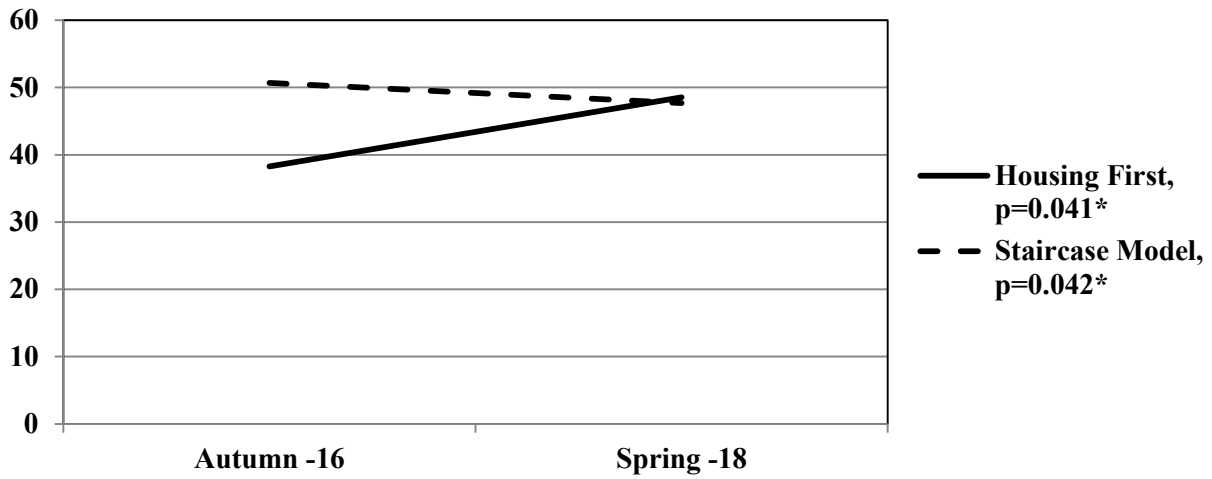

Figure 2. Graphic representation of the changes in mean Recovery Assessment Scale scores. The p-values were obtained from Wilcoxon Signed Rank Test, * indicates statistical significance.

For the secondary outcomes, SSR, AUDIT and DUDIT, we used the two-tailed version of the same test as for RAS. None of the changes were statistically significant, see Table 3.

Table 3. Mean scores for both measurements in both interventions for the secondary outcomes.
The p-values were obtained from Wilcoxon Signed Rank Test, * indicates statistical significance

	Intervention	Autumn -16	Spring -18	p-value
Social Support for Recovery	Housing First	24.00	24.27	1.00
	Staircase Model	24.67	20.50	0.25
Alcohol Use Disorder Identification Test	Housing First	7.00	6.00	0.72
	Staircase Model	6.83	7.83	0.34
Drug Use Disorder Identification Test	Housing First	14.55	17.91	0.33
	Staircase Model	10.33	7.83	0.69

Discussion

In this study, we examined aspects of long-term recovery of participants in SM and HF programs. Results indicated that HF participants experienced greater recovery, compared to those in SM. In HF, the change was positive and even reached a greater value than the second measurement from SM. In SM, there was a small but significant decrease. HF is designed to build recovery among its participants and the results of this study indicate that it is working. In SM, following rules and staying sober is rewarded. Even though some of the personnel at the support housings might adhere to the concept of recovery it is not built into SM. One might even make the case that rewarding the ability to follow rules that does not apply to the rest of society limits the participants ability to make choices based on their own needs and might therefore be counter productive in terms of recovery. In other words, the participant has to adapt to the intervention in order to meat their goals and not the other way around. This might be part of an explanation for the decrease in recovery found in the control group in this study. When looking at the support (measured with SSR), we observed no real change in HF but a small decrease for SM. This is consistent with the observed change in recovery and somewhat strengthen the assumption we made for our primary outcome, although the result failed to reach conventional levels of statistical significance.

When looking at parameters of addiction, there were two interesting non-significant tendencies for changes. The first was the small tendency for increase of alcohol use for SM. Given SM's sobriety approach this is quite surprising and, if the tendency is shown to represent a real increase in consumption, raises the issue of its effectiveness. The second interesting change is the increase in drug use for HF. One explanation could be that, for some of the participants, HR and allowing the use of drugs leads to increased use and not the reduction of symptoms. If this is the case, investigation into why is warranted because HR already has compelling evidence (25). The increase was statistically non-significant. The two other, statistically non-significant changes represented a small decrease in AUDIT and DUDIT, which are to be expected from both interventions.

Because of the substantial non-response we conducted a drop-out analysis on the data from the first measurement to assess its impact. The Mann-Whitney U test showed us that the non-response group from HF scored significantly higher on DUDIT than the group that participated in both measurements. No other difference was found. While this might serve as an indicator to why they did not participate in the second measurement it does not impact our primary outcome.

The superiority of HF compared against treatment as usual have been shown several times regarding housing stability and cost effectiveness (23,26–28, 36). Many studies have had problem yielding statistical significance on parameters of mental health and addiction even if the results often points toward HF superiority. This leaves the question, whether HF truly is superior in this sense, unanswered. In a randomized trial from 2015, following 378 homeless individuals during 2 years, HF was compared to treatment as usual in Canada. They found HF to be superior regarding housing stability. They also compared the two interventions regarding community functioning, quality of life and parameters of addiction, failing to show significant results (36). The reasons we found significant result regarding mental health while other, much larger and randomized studies failed are unknown. However, there are two things that might factor in. The first one is the difference regarding treatment as usual between countries, making comparison difficult. The second is our choice of recovery as a primary outcome. This might show differences that similar outcomes such as capability, symptoms of mental illness or quality of life misses. One also has to

consider the inherent limitations of our study and the possibility of the results only being applicable on the study population.

Strengths and Limitations

At 18 months, this is one of the longer studies following homeless people and therefore might have detected changes that might have been overlooked or not yielded significance in a 6 or 12-month study. We provided data on participants of SM and HF, guiding future improvements on the two models regarding recovery, social support, consumption of alcohol and the use of drugs. This study had a small study population of 18 participants in total, all in Stockholm, Sweden. This affects both the generalizability and reliability of the results. A small study population decreases the chance of identifying differences between groups and increases the probability of bias selection having an impact on the results. Furthermore, both HF and especially treatment as usual (in this case SM) are different depending on the city or country, which further limits generalizability. One can also argue that the group constructed for comparison was not ideal because of the obvious difference in needs. This means that the observed significant differences might be an effect of initial selection and regression to the mean. It is possible that this can explain both changes. It is to be expected that participants in SM start with a higher recovery than the HF group, given the way one qualifies for HF. It is not to be expected that the recovery would decrease for SM. However, they might have been selected for some unknown variable, making their initial recovery greater than we expected. Another argument against regression to the mean is that in the second measurement, the recovery of HF was greater than SM. However, the difference in recovery for the second measurement is not big enough for us to truly differentiate between the two groups. Further studies are needed to rule out regression to the mean. Another limitation of this study is that we used recovery and SSR as outcomes. These are areas of focus in HF and not in SM; therefore one can expect superior results on these variables. However, the opposite goes for AUDIT and DUDIT, which measures symptoms of problematic use. These are areas of focus in SM and not in HF, which uses HR.

It is of course possible that the non-response had an effect that impacted our results. We have no way of knowing the change in any of the variables for these people but the fact that they were not available for the second measurement might indicate that they were not reaching their goals. If

this would have had a negative or positive effect on our results remains uncertain. However, given the response analysis we have done what we can to mitigate the non-response problem.

Significance and Future Studies

For Stockholm, the results of this study indicates that there are some participants in SM that might, in terms of recovery, benefit more from HF. The study also indicates that SM might not be equipped to catalyze recovery among participants with complex needs similar to the participants of HF. If this result is replicated and recovery is prioritized, this should be taken into account when deciding on future research and interventions for the homeless in Stockholm. To generalize these results beyond the study population larger studies and maybe a randomized trial is needed.

Conclusions

This study concludes that, in terms of recovery, HF was a superior intervention compared to the SM for the study population. This indicates that HF might be a better alternative than SM in terms of recovery for homeless people with complex needs. The results also indicate that for these people, SM might not have the tools to develop their recovery in a positive direction. The conclusions are preliminary and to determine causality or general correlations, further studies are needed.

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