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ORIGINAL ARTICLE

A Randomised Controlled Trial of Evidence Based Supported Employment for People Who have Recently been Homeless and have a Mental Illness

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Abstract Individual placement and support (IPS) has not been tested experimentally among people recently housed with a scattered-site Housing First program. Ninety recently housed people were randomized to IPS or usual services. Regression models estimated via GEE were used to compare employment outcomes. Over 8 months of follow-up with good fidelity, fifteen (34 %) people in the IPS group versus nine (22 %) in the control group found competitive employment ($p = 0.16$). Adjusted odds of obtaining competitive employment were greater in the IPS group (OR 2.42, 95 %CI 1.13–5.16). Other employment outcomes were not significantly different between groups. Satisfaction with services was greater in the group receiving IPS. In this study, IPS was a modestly useful adjunct to scattered-site Housing First for people with mental illness who have been homeless.

Keywords Evidence-based supported employment · Homelessness · Mental health

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Background

Unemployment among people who are homeless is estimated to be between 80 and 90 % (Acuña and Erlenbusch 2009; Aubry et al. 2011; Pickett-Schenk et al. 2002) in spite of their frequently expressed desire for regular work (Acuña and Erlenbusch 2009; Daiski 2007). People who are homeless encounter many obstacles to returning to work (Morrell-Bellai et al. 2000; Pickett-Schenk et al. 2002; Waghorn and Lloyd 2005) including some that result from simultaneous homelessness and mental illness (Poremski et al. 2014). Individual placement and support (IPS) has been shown to be the most effective supported employment model for people with mental illness to obtain and maintain competitive employment (Bond and Drake 2012; Marshall et al. 2014). With regards to people who are also homeless, in a meta-analysis, Campbell et al. (2011) report that IPS improved employment outcomes among 103 people who had experienced homelessness in the past year at least as much as for the domiciled subgroup (Campbell et al. 2011). The few studies of employment programs (mostly non-IPS) for recently homeless individuals have yielded modestly positive, but encouraging results (Burt 2012; Ferguson et al. 2011; Rosenheck and Mares 2007).

This article presents the first trial of IPS offered to people with mental illness who had been homeless, and have been recently housed by a scattered-site Housing First program (Goering et al. 2011; Stergiopoulos et al. 2015). We hypothesize that participants assigned to IPS will achieve better competitive employment outcomes than participants receiving usual vocational services within the same Housing First program. We also hypothesize that participants receiving IPS will be more satisfied with their vocational services than participants receiving usual vocational services.

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Methods

Study Setting and Participants

Participants were recruited from among the 204 participants of the Montreal site of the At Home/Chez Soi study who had been classified as having moderate needs and who had been assigned to the scattered-site Housing First experimental group (Latimer et al. 2014; Stergiopoulos et al. 2015). Having been housed in an apartment of their choice at the beginning of the At Home/Chez Soi study, they were followed by one of two intensive case management (ICM) teams as well as by a common housing team that was responsible for handling issues involving landlords. All participants had access to a rent supplement, set so that they had to contribute at most 30 % of their income towards rent.

In Quebec, every adult under 65 who has no other source of income, has access to a basic monthly social assistance amount or, if they are disabled, a somewhat higher disability amount. This amount is reduced dollar-for-dollar for every additional dollar earned by the individual above the monthly earning exemption threshold ($100 or $200 depending on the type of benefit received). Health care coverage continues if the person begins to work.

Inclusion criteria for the parent At Home/Chez Soi study were: 18 years of age or older, the presence of a mental illness (major depression, mania or hypomania, post-traumatic stress disorder, panic disorder, mood disorder with psychotic features, psychotic disorder), and having been either in absolute homelessness for at least seven nights, or precariously housed with at least two separate instances of absolute homelessness in the past year. Absolute homelessness was defined as sleeping in street locations or emergency shelters (Goering et al. 2011).

On the basis of the typically large effect sizes (0.8) for the difference in the proportion of participants obtaining a competitive job that are documented in the literature (Bond et al. 2008), a power calculation estimated that 45 participants in each treatment arm would be sufficient to detect differences with a precision of 0.001.

Study Procedure

Potential study participants were repeatedly invited to enroll, normally at the baseline, 6-month, and up to the 12-month interviews of the parent study. Due to delays in hiring an employment specialist, however, recruitment for the IPS sub-study did not begin until Sept 2010, when some participants had already done their baseline or 6-month interviews in the main study. We had planned to end recruitment no later than March 2012, as data collection was due to end in March 2013 and we wanted at least 12 months of follow-up for every participant in the IPS sub-study. During the early period between September 2010 and July 2011, recruitment was slow. However, as implementation of the intervention progressed, recruitment increased. The recruitment target of 90 was reached just in time in March 2012 thanks to increased recruitment activity near the end of the recruitment phase. Due mainly to attrition from the main study and difficulties contacting some participants, in the end 188 of the potential 204 participants were invited to participate in the IPS trial one or more times (see Fig. 1).

Stratified randomization, with blocking within strata, was used to assign participants to either IPS or usual vocational services. Randomization was stratified by ICM team and by past work experience (having worked in the past 5 years, or not).

All participants signed an informed consent form prior to participation. The ethics review board of the Douglas Mental Health University Institute, affiliated with McGill University in Montreal, Canada, approved the study.

Intervention

For participants assigned to the IPS condition, the aim was to implement and maintain a high-fidelity IPS intervention (Drake et al. 2012), so that participants could quickly obtain and maintain competitive employment of their choice. Employment specialists were trained and supervised by a senior member of an experienced local IPS service (Latimer et al. 2006). They worked closely with the clinical teams from whose caseloads their clients were drawn.

Participants randomized to the control condition were free to seek employment by any means of their choice, with some support from their case managers. Available services included training with eventual placement in jobs reserved for people receiving basic social assistance or disability payments. Community-based services for people who were homeless were also available. None of these services were integrated into the clinical teams, or offered continuous time-unlimited personalized support.

Both groups received Housing First, which led to increased housing stability (Stergiopoulos et al. 2015).

Program Fidelity

Program fidelity was assessed twice, using the 25-item supported employment fidelity scale (Bond et al. 2012). Figure 1 also shows the times at which fidelity was assessed. The evaluation relied on document review, key

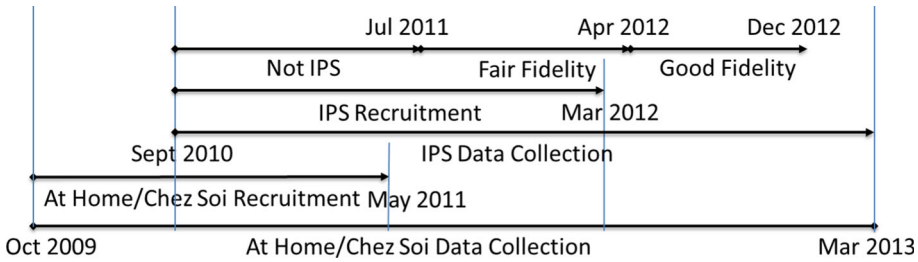

Fig. 1 Timelines of study recruitment, data collection, and program fidelity

informant interviews, and direct observation of employment specialist activities. The fidelity scale was modified for the Quebec setting by dropping an item documenting the collaboration between employment specialists and Vocational Rehabilitation counsellors, an American service for which there is no equivalent in Quebec. In July 2011 fidelity was assessed as fair (73/120). Nine months later, in April 2012, soon after the first employment specialist was replaced with another and training efforts had been renewed, it was assessed as good (100/120). We assumed that fidelity remained good until mid-December 2012, when the one of the employment specialists resigned. We conservatively assumed that fidelity did not reach that level until the April 2012 assessment, so that fidelity was estimated to be good only over an 8-month period, from mid-April to mid-December 2012. We had no reason to believe that fidelity was higher than fair prior to the first fidelity assessment in July 2011.

Measures

A time-line follow-back method was used to record employment history since the previous interview, normally about 3 months earlier. The primary outcome of interest was being in competitive employment. This was represented by a binary indicator of whether or not the participant had worked at least 1 day in a 30-day period. Interviewers asked for start and end dates, the nature of the job (whether competitive or sheltered, regular or casual), weekly hours worked, and wages. These data were collected retrospectively starting 3 months after baseline of the parent study, thus spanning the period from baseline of the parent study (as early as October 2009) to the end of the follow-up period (March 2013).

Demographic data had been obtained at the baseline interview of the parent Housing First study. Mental health status and substance use disorders were evaluated by trained interviewers, with support from a clinical psychologist, using the MINI international neuropsychiatric interview (Sheehan et al. 1998). The MINI was also used to determine alcohol dependence and abuse at baseline. Criminal records were accessed via provincial and municipal criminal court docket databases and were coded as present if a sentence for any type of offense was rendered or absent if no sentence was on-file.

Prior homelessness history was also obtained at baseline. Participants were considered chronically homeless if, prior to recruitment, they 1) had an uninterrupted period of homelessness that lasted at least 12 months and, 2) were homeless at least 80 % of the time since first becoming homeless.

A residential time-line follow-back questionnaire (Tsemberis et al. 2007) was administered at three-month intervals. Information gathered included the dates of accommodation in residences or shelters, and type of residence (i.e. private home, institutional, or emergency shelter). Places of residence were categorized into three groups: (1) stable (permanent accommodation), (2) institutional (hospital inpatient units, or correctional facilities), and (3) unstable (precarious housing, street, or emergency shelters). Since this is a time-dependent variable, the study period was divided into 90-day periods. Participants were considered to belong to a category if they had spent at least 60 out of a given 90-day period in residences of that category. If they had not, housing during that period was classified as mixed.

The ten-item Service Satisfaction Scale (Greenfiels and Attkinsson 2004; Mitton et al. 2005) worded to refer to employment services, was administered at six-month intervals, and completed by participants who actually received IPS services or, for those in the control group, who availed themselves of vocational services. Items were rated on a five point scale, with higher values indicating greater satisfaction. The scale asks responders to rate the quality and quantity of help they received, the knowledge of the staff, their ability to listen and address concerns, their ability to maintain confidentiality, the service's contribution to controlling their symptoms, and the responder's general satisfaction.

Finally, observation of a graph tracing employment rates by 30-day periods according to experimental group revealed that reported employment rates tended to be higher in the month prior to the interview, suggesting that participants tended to forget jobs that they had held more than 1 month before the interview. This association was common to both groups. (It is also observable across the

entire, much larger At Home/Chez Soi data set (Poremski et al. In press). To account for this effect, we included a binary variable indicating whether the observation came from the 30 day segment that immediately preceded the interview from which employment data were recorded.

Allocation Concealment and Blinding

Allocation concealment was achieved by supplying allocations in opaque envelopes. Group assignment was only revealed after the end of the interview. Due to the nature of the questionnaires used to measure satisfaction with services, interviewers could not be blinded to group assignment.

Analyses

We performed an intent-to-treat analysis on the 8-month period the program was implemented with good fidelity. Six jobs that began before the program had reached good fidelity were dropped, because they could not be attributed to the efforts of employment specialists performing at a good level of fidelity (three in the IPS group, and three in the control group). A generalized estimating equation (GEE) with logit link function was used to estimate the population-average longitudinal effect, of the intervention on the primary outcome, odds of obtaining competitive employment (Diggle et al. 2009). Both fixed covariates (alcohol and substance abuse at baseline, sex, education, criminal record, presence of psychotic illness, and past history of chronic homelessness) and a time-dependent one (housing status) were used to adjust for confounding effects. A χ^2-test was used to test the unadjusted difference in the employment rates. Multiple imputation (MI) by chained equations (Azur et al. 2011) was used to impute the 10.5 % of employment data that were missing (Individuals who died during the study were excluded from the analysis and imputation). The imputed values were modeled as a function of employment during the three previous and three following months, and housing stability during the current and two previous months. The imputation model also included all covariates used in the final regression model. Fifty datasets, cycling over 2000 iterations, were imputed (Graham 2009).

Two sensitivity analyses were conducted. In the first, missing days were treated as days during which the person had not worked. In the second, the period considered for analysis was extended to the entire study period, from randomization to the last point in the study and the corresponding estimated fidelity rating included as a time-dependent covariate. Three jobs that began before randomization were dropped (one in the IPS and two in the control group). These jobs had ended before the transition from fair to good fidelity in April 2012 (Fig. 1) and thus do not affect the results of the analysis of the good fidelity period.

Differences in secondary outcomes, including satisfaction with services, were compared statistically, using a *t* test or the non-parametric Somers' D (Newson 2001) for continuous variables as appropriate, or a χ^2-test for categorical variables (Fisher's exact χ^2 when obs <5). Due to the number of comparisons, an alpha level of 0.01 was used as a threshold of statistical significance. All analyses were carried out using STATA 13 (StataCorp, 2013).

Results

Figure 2 describes participant flow through the trial. Twenty-two participants were undecided about participating at the time recruitment reached its target. No information was collected about reasons for declining to participate or for remaining undecided. However, those that declined but nonetheless wanted employment tended to be older, to have fewer years of education, to have spent significantly less time homeless, and they were less likely to have a criminal record (Poremski and Hwang In press).

Five participants left the study before completing three interviews: two withdrew and three passed away. The average length of follow-up considered in the analysis (during which fidelity had attained a level considered good) was 222 days (SD 38) in the IPS group, and 206 (SD 59) in the control group. Demographic characteristics, MINI diagnoses, and history of homelessness are presented in Table 1. None of the baseline differences differed significantly between groups. Thirty-six of the IPS participants used the program, and 28 participants in the control group used some vocational services.

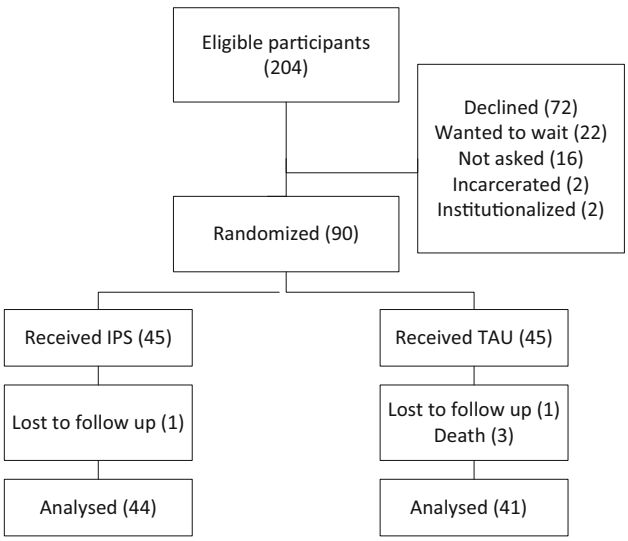

Fig. 2 CONSORT diagram of participant flow

Table 1 Sample characteristics (n = 90)

	IPS n = 45		Control n = 45		$p\times$
	n	%	n	%	
Follow-up duration in days (mean, SD)[a]	222, 38		206, 59		0.19
Male	29	64	28	62	0.84
Age (mean, SD)	45.2, 9.4		47.1, 10.6		0.37
More than 12 years of education	19	43	27	60	0.11
Worked continuously for 1 year+	37	82	39	87	0.51
Not working due to					0.98
Mental illness	19	42	20	44	
Physical illness	3	7	4	9	
Both mental and physical illness	7	16	7	16	
Other reasons for not working	16	35	14	31	
Criminal record present	28	62	29	64	0.84
One or more arrests in the past 6 m	13	29	7	16	0.14
Alcohol dependence/abuse at baseline	17	38	16	36	0.84
Substance dependence/abuse at baseline	16	36	21	47	0.29
MINI Diagnosis					0.35
Major depressive disorder	29	64	29	64	
Psychotic disorder	8	18	12	27	
Panic disorder	2	4	3	7	
Mania-hypomania	3	7	1	2	
PTSD	3	7	0	0	
History of chronic homelessness	9	20	6	13	0.37
Spent at least 60 of the past 90 days at the midpoint of the analysis period in 0.12					
Stable housing[a]	33	75	37	90	
Unstable housing[a]	8	18	4	10	
Institutional setting[a]	3	7	0	0	

$\times$ *t*-test, test of proportion, or χ^2-test (Fisher's exact test)

[a] Analysed sample: IPS n = 44, Control n = 41

Thirty-four percent (15/44) of participants in the IPS group obtained a competitive job during the eight-month observation period compared with 22 % (9/41) in the control group ($\chi^2(1) = 1.05$; p = 0.16). Adjusted regression model estimates are reported in Table 2. Participants in the IPS group had a 2.4 greater chance of obtaining employment, compared with participants receiving usual services. Several variables had an impact on the odds of obtaining employment: People with more than 12 years of education had two-fold greater odds of obtaining a competitive job, and men were more likely than women to obtain employment. People reporting substance use at baseline had three-fold greater odds of obtaining employment. People were significantly more likely to report jobs they had in the 30 days before the interview.

In the first sensitivity analysis, assuming that participants did not work during missing periods did not materially change the odds ratios or the confidence intervals reported in Table 2. In the second, extending the time period from the point of randomization to the final data-collection point (follow-up duration of 702 days (SD 145) in the IPS group and 730 (SD146) in the control group, p = 0.342) and including a measure of fidelity as a covariate did produce a different result: a non-significant odds ratio for IPS of 1 (OR 1.01, p = 0.96, 95 %CI 0.59–1.73). Neither the period of fair fidelity, nor the period of poor fidelity was associated with statistically significantly reduced odds of obtaining employment (0.70, p = 0.34, 95 %CI 0.34–1.45; 0.67, p = 0.18, 95 %CI 0.38–1.20, respectively).

Employment outcomes are presented in Table 3. Among participants who obtained competitive employment job tenure, hours worked, and wages paid were not significantly different between groups.

IPS participants were much more satisfied with the vocational support they received than the control participants were with the services available to them. Every question returned a significant difference between the groups, favouring IPS, with the exception of the role of IPS

Table 2 Regression estimating the effect of IPS on being in employment for the 8 month period of good fidelity (n = 85)

	OR	RSE	z	*p*	95 % CI	
IPS	2.418	1.472	2.28	0.022	1.133	5.157
Alcohol dependence at baseline	0.996	1.002	−1.71	0.089	0.992	1.001
Substance dependence at baseline	3.030	1.515	2.67	0.008	1.342	6.843
Education (12y +)	2.509	1.437	2.54	0.011	1.233	5.106
Criminal record	0.538	1.532	−1.45	0.147	0.233	1.243
Chronic homelessness	1.452	1.636	0.76	0.449	0.553	3.808
Thirty days prior to interview	2.531	1.202	5.04	0.0001	1.764	3.632
Type of residence, compared to Stable housing						
Mixed	0.684	1.430	−1.06	0.288	0.339	1.379
Unstable	0.234	2.923	−1.35	0.176	0.028	1.921
Institution	0.452	3.818	−0.59	0.554	0.033	6.248
Male	2.555	1.557	2.12	0.034	1.072	6.086
Psychotic disorder	0.533	1.677	−1.22	0.223	0.193	1.467

OR odds ratio, *RSE* robust standard error, *CI* confidence interval

Table 3 Employment outcomes (n = 85)

	Study period	IPS	Control	Test statistics	*p*
Obtained competitive job during study (n, %)	Period of good fidelity	15, 34 %	9, 22 %	$\chi^2(1) = 1.05$	0.16
	Entire study	23, 52 %	18, 44 %	$\chi^2(1) = 0.74$	0.46
For those who obtained competitive jobs during the study					
Median period of job tenure in competitive employment, in days (mean; median, IQR)	Period of good fidelity	58; 54, 19–107	79; 72, 26–92	t(52) = 0.73	0.46
	Entire study	116.8; 57, 15–109	102.9; 58, 14.5–102	z(112) = 0.20[a]	0.99
Hours per week in competitive work during jobs (mean; median, IQR)	Period of good fidelity	38.7; 30.5, 8–45	23.2; 26.5, 9–40	t(53) = 1.03	0.10
	Entire study	26.0; 25, 8–40	25.8; 25, 12–40	t(110) = 0.40	0.98
Wage/hour for competitive work (mean; median, IQR)	Period of good fidelity	$16.82; $12.00, 10.00–13.00	$13.19; $13.00, 10.00–15.00	t(53) = 0.89	0.34
	Entire study	$13.84; $12.00, 10.00–15.25	$12.81; $12.00, 10.00–14.50	t(116)[b] = 0.81	0.42

IQR interquartile range

[a] Somer's D

[b] Degrees of freedom are different because of six instances of missing values related to start dates of jobs and hours worked

in dealing with mental health symptoms. The mean total score on the Service Satisfaction Scale, out of a possible 50, for the IPS group (n = 33) was 41 (SD 8) versus 34 (SD12) ($p < 0.001$) in the control group (n = 22). Three participants assigned to IPS did not complete the scale. Six participants from the control group who had received alternative vocational services did not complete the scale.

Discussion

This study is the first randomized trial of evidence-based supported employment offered to recently homeless participants of a scattered-site Housing First intervention. People receiving IPS, during the period when IPS services had attained good fidelity, were more than twice as likely to obtain employment compared with people receiving usual services, when controlling for confounders. Participants who received IPS services were also more satisfied with the IPS intervention than the control participants were with the vocational services available to them. Differences in other vocational outcomes were not statistically significant.

The IPS employment rate observed in this study, 34 %, is low compared with those reported by other IPS programs in general (usually 60 % or more), and also specifically with IPS programs from outside the US (47 % on average), including one previous trial also conducted in Montreal

(also 47 %) (Bond et al. 2012; Latimer et al. 2006). Even though our comparison involves IPS services that had achieved good fidelity, our results are more similar to those of a handful of studies of programs specifically targeting people with mental illness who are homeless, but that did not follow the IPS model (Burt 2012; Ferguson et al. 2011; Rosenheck and Mares 2007). It must be kept in mind, however, that this relatively low percentage represents accrual over an 8-month period only.

Our primary analysis considered only jobs which began in the period during which good fidelity was achieved. The fact that IPS appears to have achieved improved employment outcomes over this short period, during which good fidelity had been achieved, while it did not over the entire, much longer study period, during most of which fidelity was only fair or poor, is consistent with other studies that report an association between higher fidelity and better employment outcomes (Bond et al. 2011).

Qualitative findings not presented here suggest that motivation to search for work fluctuated greatly over time for most participants who accepted randomization (Poremski et al. 2015). This appears to have been an important obstacle to finding competitive work, a finding in line with previous research (Alverson et al. 2006; Henry and Lucca 2004; Rinaldi et al. 2008). Other characteristics of the formerly homeless sample may also have played a role. For example, nearly two-thirds had a criminal record, which as noted in some qualitative interviews reported elsewhere, contributed to self-stigmatization in some participants (Poremski et al. 2014) thus compromising motivation (Bond et al. 2015). This could have also directly increased employer resistance to hiring, though the regression estimates do not suggest having a criminal record reduces the odds to a statistically significant extent.

Several limitations may be noted. First, fidelity was only assessed twice. We made conservative assumptions, however, about fidelity level in the absence of information. Second, the clinical teams to which employment specialists were assigned may have learnt from them and helped their clients get jobs to a greater extent than they would have, had the study not taken place. Third, our sample size is relatively small, reducing statistical power. Fourth, a significant difference in job acquisition rates between the groups emerges only after restricting the period of observation to the period of good fidelity and adjusting for potential confounders that were not differently distributed between the two groups at baseline. However, these factors were selected a priori, on the basis of prior research demonstrating their impact on employment. Finally, the period of follow-up considered for analysis was somewhat higher on average for the IPS group, although the difference was no statistically significant.

In conclusion, participants randomized to IPS had greater odds of obtaining employment than participants receiving usual services, when those services had attained good fidelity and when adjusting for confounding variables. Participants who availed themselves of IPS services were more satisfied with them compared with control participants who used traditional services. Nonetheless, IPS was less effective at increasing competitive employment rates in this study than in previous studies. Several factors, notably a short observation period during which good fidelity to the IPS model was attained, and wavering participant motivation, may have contributed to the low employment rates. Further research is needed to better understand the potential of IPS as a service model for people recently housed in the context of a scattered-site Housing First program.

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Compliance with Ethical Standards

Conflict of interest None.

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