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ORIGINAL PAPER

A Comparison of Healthcare Use and Costs for Workers with Psychiatric Disabilities Employed in Social Enterprises Versus Those Who Are Not Employed and Seeking Work

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Abstract

Because of work's contribution to recovery, governments have moved to improve employment rates of people with severe mental disorders (SMDs). Social enterprises (SEs) have been identified as a means to achieve employment. In Ontario, Canada, the Ministry of Health and Long-Term Care (MOHLTC) have provided SEs government subsidies. Public funding arrangements create a potential trade-off for governments that must decide how to distribute constrained budgets to meet a variety of public needs. In Ontario, the government is potentially faced with choosing between supporting employment versus healthcare services. This study addresses the question, are there significant differences in service use and costs from the MOHLTC's perspective for people with SMDs working in SEs versus those who are not working and looking for work? Our results indicate there is a significant difference in healthcare use between the two groups suggesting there could be less healthcare use associated with SE employment.

Keywords Severe mental illness · Employment · Social enterprises · Healthcare costs

Introduction

Paid employment is an important contributor to health (Butterworth et al. 2011; Ford et al. 2010; Ross and Mirowsky 1995; Thomas et al. 2005) as well as a means of improving health equity (Marmot et al. 2008). Marmot et al. (2008) assert, "Full and fair employment and decent work must be a central goal of national and international social and economic policy making (p. 1664)." For people with severe mental disorders (SMDs) such as schizophrenia and major depression, employment can be a significant challenge. Between 70 and 90% of people with SMDs who would like to work, do not (World Health Organization 2000). These low employment rates are of particular concern because employment can be a critical component of mental health recovery (Andresen et al. 2003; Corbière 2008). At the same time, it is not employment alone that is critical; the quality of the job into which people enter is also essential (Butterworth et al. 2013, 2011). There is evidence that those who move from unemployment to employment are exposed to an increased risk of diminished mental health if their employment is in a poor quality job such as those that expose workers to chronic high stress (Butterworth et al. 2011).

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Because of the potential contribution of work to recovery, there is movement towards improving employment rates for populations with SMD (OECD 2012). Social enterprises have been identified as a promising means of achieving these employment goals (Corbiere and Lecomte 2009; Svanberg et al. 2010). Social enterprises are entrepreneurial non-governmental organizations with a social mission of employing people with disabilities who face challenges entering the competitive labor market. Social enterprises are designed to offer supportive work environments that provide work accommodations to workers requiring them (Corbière et al. 2017). Thus, they address the stigma people with mental illnesses face while providing supportive work environments that have been observed to improve continued employment for people with mental disorders (Follmer and Jones 2018). Because they foster employment, social enterprises have been associated with positive psychological outcomes related to self-stigma, self-efficacy, and confidence (Villotti et al. 2017).

In Ontario, Canada, the Ministry of Health and Long-Term Care (MOHLTC) provide social enterprises government subsidies. In turn, these social enterprises reinvest profits back into their enterprises to improve working conditions and to ensure workers receive a living wage. In Ontario, there are more than 60 social enterprises that together receive MOHLTC funding totaling more than CAN$5 million. The type of business that these social enterprises engage in is influenced by workers' needs (Nelson et al. 2006).

Funding arrangements that involve the use of public funds create a potential trade-off for governments that must decide how to distribute constrained budgets to meet a variety of public needs. Specifically, in the case of Ontario's social enterprises, the government is faced with the choice of supporting employment versus healthcare services. Consequently, a potentially important question for public healthcare funders is whether investments in social enterprises can create cost savings for the publicly funded health system with respect to healthcare service use and costs. Indeed, there is evidence that employment is significantly related to decreases in psychiatric service costs (Luciano et al. 2014). However, the evidence for reduced psychiatric hospitalizations is equivocal; studies have either reported no significant relationship (Luciano et al. 2014) or a significant decrease among those who are employed compared to those who are not (Kukla et al. 2012). None of these studies has examined the relationship between employment and healthcare service use among workers employed in social enterprises.

The purpose of this study is to examine healthcare service use and costs for social enterprise workers versus a population of people with psychiatric disorders who are currently unemployed and seeking employment. We address the question, are there significant differences in service use and costs from the MOHLTC perspective for people with mental health disorders in social enterprises versus those who are not working and looking for work?

Methods

The protocol for this study was reviewed by the Centre for Addiction and Mental Health's and the University of Sherbrooke's Research Ethics Boards. Informed consent was obtained from all study participants by trained study staff. All authors acknowledge that there are no known conflicts of interest, and certify their responsibility for this manuscript.

Participating Social Enterprises and Organization

Participating Social Enterprises

Five Ontario-based social enterprises participated in this study; all were located in Toronto, Canada. The social enterprises represented a variety of businesses with varying numbers of employees. The types of businesses (the total number of employees are reported in parentheses) included courier service (n = 50), catering (n = 8), horticulture (n = 22), restaurant (n = 30), and house painting service (n = 21). The participating social enterprises recruited people with histories of mental disorders who were not employed in the competitive labor market. Four of the social enterprises (i.e., courier services, catering, horticulture, and restaurant) were consumer/survivor-run businesses. Consumer/survivor-run social enterprises are developed, owned, and managed by people with SMDs. One business (house painting service) followed an Integration Enterprise model. The Integration Enterprise model involves non-profit organizations whose goal is social integration; these organizations provide integration/training for employees and focus on competitive business activity.

Participating Non-governmental Organization

The comparison group was drawn from a drop-in center housed in the same building as two of the social enterprises and the administrative offices of four of the participating social enterprises. The drop-in center offers social activities such as music, art, meditation, and sports. It focuses on serving people who are financially disadvantaged.

Study Participants

Social Enterprise Study Participants

Workers were informed of the study by their supervisors. Supervisors also notified workers when study staff would

be available onsite to explain the study and to answer questions. Study staff explained the study's purpose to interested workers who attended the information sessions. Potential study participants who were uncomfortable with completing the study questionnaire at the social enterprise were able to make arrangements to complete the questionnaire at a convenient, mutually agreed upon off-site location. Questionnaires were completed outside of the participants' scheduled working hours. There was no time limit for the questionnaire completion. If a participant became fatigued while completing the questionnaire, another time was scheduled to complete it.

The inclusion criteria for social enterprise participants were: (1) employed by one of the participating social enterprises, (2) ≥ 18 years of age, and (3) a self-reported a SMD. All employees of the social enterprises who self-reported as having a SMD were invited to participate. In this study, SMD was defined as a mental illness that interfered with the ability to maintain employment in the competitive labor market. Thus, in this study, there was a recognition that a severe mental disorder means more than a psychiatric diagnosis and severity of symptoms but interference with functioning as well (Corbière et al. 2013). The definition is consistent with that used by the Ontario Ministry of Health and Long-Term Care which also considers the diagnosis and the severity of the symptoms in terms of their impact on the ability to function in one or more major life activities. Examples of these types of disorders include schizophrenia and mood disorders (OMHLTC 1999). In this study, the self-reported diagnoses were: schizophrenia (29.9%); bipolar disorder (23.0%); major depressive disorder (31.0%); anxiety disorder (23.0%); substance use disorder (11.5%). In addition, 73.6% reported only one disorder while 13.8% reported two disorders and 12.6% reported three or more disorders. In total, there were 101 participants from the participating social enterprises. The response rates for each of the businesses were: courier services: 70% (n = 35); catering: 75% (n = 6); horticulture: 95% (n = 21); restaurant: 60% (n = 19); and house painting service: 95% (n = 20).

Comparison Group Participants

Potential participants were informed of the study by drop-in staff and were told when study staff would be available onsite to explain the study and to answer questions. The inclusion criteria for the comparison were similar to those of the social enterprise group: (1) not employed but looking for a job, (2) ≥ 18 years of age, and (3) a self-reported SMD. The self-reported diagnoses included: schizophrenia (21.7%); bipolar disorder (20.6%); major depressive disorder (50.5%); anxiety disorder (57.7%); substance use disorder (27.8%). Among this group, 44.3% reported only one disorder, 21.7% reported two disorders, and 34.0% reported three or more disorders. In total, there were 97 participants in the non-employed group. Although recruitment was conducted at the drop-in, study participation was not limited to drop-in service users. In meeting rooms located in the same building but on a different floor apart from the drop-in center, study staff explained the purpose of the study to interested participants and obtained informed consent from those interested in enrolling. An identical study process to that used with the social enterprise group was employed with the non-employed group. Potential participants requesting to complete the questionnaire at another site were accommodated with arrangements to complete the questionnaire at a convenient, mutually agreed upon off-site location. Additional meetings were scheduled for participants who became fatigued while completing the questionnaire. No time limit for completion was applied.

Data Collection Measures

Sociodemographic Characteristics

Sociodemographic characteristics were collected using a modified version of the Matryoshka Project demographic form (Dewa et al. 2010). To describe the characteristics of the study participants, the following variables were created: gender (Male/Female/Other), age (in years), marital status (single, never married/married or co-habiting/disrupted marriage), born in Canada (Yes/No), educational attainment (Completed high school/Did not complete high school), and monthly income during the past 6-months.

Health Status

Information about mental health severity was collected using the 18-item Brief Symptom Inventory (BSI). The BSI is a self-report scale that assesses symptom severity related to psychiatric disorders including somatization, depression, and anxiety. Unlike the longer 53-item BSI, the 18-item version does not measure symptom distress related to hostility and psychosis. Items are rated on a 4-point rating scale from 0 (not at all) to 4 (extremely) (Derogatis and Melisaratos 1983; Hoe and Brekke 2008). The global distress index was calculated as the sum of all the items with an internal consistency of $\alpha = 0.89$.

Respondents were asked whether they had a physical disability. The responses to this question were used to create a dichotomous variable to indicate whether the respondent had a physical disability.

Healthcare Service Use

Information collected about healthcare service use included psychiatric inpatient stays, emergency room (ER) visits,

physician visits, prescription psychotropic medications and community mental health (CMH) services. Except where indicated, information about service use was collected based on the Client Service Receipt Inventory (CSRI) (Beecham and Knapp 2001), a tool developed for economic evaluations of mental health programs and services. All service use was standardized to 6-months.

Psychiatric In-Patient, ER, Physician, and Community Program Use

Questions were asked about past 6-month psychiatric inpatient admissions, inpatient days, and number of ER visits. Information was also gathered about past 6-month physician visits (primary care and psychiatrist) and CMH program service contacts including: (1) vocational/employment supports, (2) educational supports, (3) social/recreational supports, (4) housing support and (5) counseling visits.

Medication Use

Six-month prescribed drug information was gathered using the Matryoshka medication log (Dewa et al. 2010). Respondents were asked about the medications they were prescribed and filled as well as the dosage for these prescriptions during the past 30-days. They were also asked whether these medications were typical of medications taken during the past 6-months. Medications were included in this analysis if the respondents indicated the drug was one they typically used during the past 6-months.

Unit Costs (UCs)

All UCs reflected costs to the publically funded healthcare system. All costs were adjusted to 2014 real dollars based on the Statistics Canada's Consumer Price Index for healthcare and personal care for Ontario (Statistics Canada 2015a).

Healthcare Service Use UCs

Ontario MOHLTC covered services include inpatient, emergency, and physician visits. The UCs for inpatient and ER services were obtained from the Canadian Institute for Health Information's Canadian MIS Database (Canadian Institute for Health Information 2013). Psychiatric inpatient and ER UCs were the calculated mean direct costs for a psychiatric inpatient day and ER visit. The Ontario physician visit UCs were also obtained from the Ontario Schedule of Benefits.

Community Service UCs

The CMH services costs were obtained from the Toronto Central Local Health Integration Network (LHIN). They represent the UC for case management for people with psychiatric disorders based on the funding received by LHIN-funded agencies.

Medication UCs

The Ontario MOHLTC covers prescription drug costs for people who qualify for the Ontario Drug Benefit (ODB) program. ODB covers people who are $\geq$ 65 years of age as well as people who are financially disadvantaged (Ontario Ministry of Health and Long-term Care 2015). UCs were taken from the ODB formulary.

Analyses

The sociodemographic characteristics and health status of the two groups were compared and tested for statistically significantly differences using chi-squared statistics for categorical variables and t-test statistics for continuous variables.

Logistic regression models were used to test for whether there were statistically significant differences in the probability of healthcare service use with regard to psychiatric hospital, emergency room, outpatient physician, community mental health program, and prescription drugs. To test for the robustness of estimates, odds ratios were estimated both without and with adjustment for the contribution of educational attainment, BSI score, and presence of a self-reported physical disability.

Costing was considered from the MOHLTC's perspectives. Total cost for each service was estimated as the product of the respective service use and unit cost. It was assumed that each community mental health program visit lasted 1 h.

Using t-tests, we compared psychiatric inpatient, emergency room, outpatient physician visits, community mental health program, and prescription drug costs for the social enterprise group versus the work-seeking unemployed group with psychiatric disorders. To test the robustness of the differences, ordinary least squares regression models were used to test whether the differences continued to be statistically significant after adjusting for the contribution of factors that have been reported to have significant effects on service use (Kukla et al. 2012; Studnicka et al. 1991) for those with severe mental illnesses and who are employed and that were significantly different between the two groups; these included educational attainment,

symptom severity (i.e., BSI score), and presence of a self-reported physical disability.

Results

Between the two groups, there were no significant differences with respect to sex, age, marital status, and immigration status (Table 1). Both groups were comprised of a majority of males (62.4% in the social enterprise group and 74.5% in the non-employed group). The mean age of the social enterprise group was 46.2 years compared to 48.3 years for the non-employed group. The majority of both groups were single, never married (61.4% in the social enterprise group and 68.0% in the non-employed group) and born in Canada (72.3% in the social enterprise group and 80.2% in the non-employed group). There were statistically significant differences in the educational attainment of the two groups ($X^2(1) = 11.33$, $p = .001$); in the social enterprise group there was a higher proportion of people who completed high school (49.0%) than in the non-employed group (25.8%).

There were no significant differences between the two groups with regard to schizophrenia ($X^2(1) = 1.64$, $p = .20$) and bipolar disorder ($X^2(1) = 0.15$, $p = .70$). There was a significant difference in the types of diagnoses reported in the two groups with regards to major depressive disorder ($X^2(1) = 7.18$, $p = .007$), anxiety disorder ($X^2(1) = 22.84$, $p < .0001$), substance use disorder ($X^2(1) = 7.62$, $p = .006$). There was also significant differences in the number of diagnoses reported with the social enterprise group more likely to report only one diagnosis ($X^2(1) = 17.08$, $p = .0001$).

There were also statistically significant differences between the two groups with respect to symptom distress (t-test (195) = −4.62, $p < .001$) and self-reported physical disability ($X^2(1) = 9.13$, $p = .003$). The social enterprise group had a lower mean BSI score (i.e., lower symptom distress overall) (32.8 vs. 40.4). This pattern held for the sub-scales: somatization (10.0 vs. 11.7); depression (12.2 vs. 15.0); anxiety (10.7 vs. 13.7). In addition, a lower proportion of the social enterprise group had a physical disability (24.2% vs. 44.8%).

Table 2 contains the results of the logistic regression models. Compared to the non-employed group, during the past 6-months, the adjusted and unadjusted odds ratios indicated the social enterprise group was significantly less likely to have a psychiatric hospitalization (OR 0.14, 95% CI 0.037, 0.53) and community mental health support visits (OR 0.41, 95% CI 0.20, 0.85). There were no significant differences between the two groups with respect to the probability of use for primary care and psychiatrist visits and medications. There were significant differences between the two groups

Table 1 Sample sociodemographic characteristics

	Social enterprise		Not employed		Statistical tests
Sex					
Males	62.4%	(n = 63)	74.5%	(n = 70)	$X^2(1) = 3.28$, $p = .07$
Females	37.6%	(n = 38)	25.5%	(n = 24)	
Mean age (in years)	46.2 years	SD = 11.3	48.3 years	SD = 10.8	t (196) = 1.38, $p = .17$
Marital status					
Single	61.4%	(n = 62)	68.0%	(n = 66)	$X^2(2) = 0.98$, $p = .61$
Married/living together	11.9%	(n = 12)	10.3%	(n = 12)	
Disrupted marriage	26.7%	(n = 27)	21.7%	(n = 21)	
Born in Canada	72.3%	(n = 73)	80.2%	(n = 77)	$X^2(1) = 1.70$, $p = .19$
Education					
Completed high school	49.0%	(n = 49)	25.8%	(n = 25)	$X^2(1) = 11.33$, $p = .001$
Did not complete high school	51.0%	(n = 51)	74.2%	(n = 72)	
Mean income (in Canadian $)	1243.75	SD = 582.76	902.74	SD = 386.02	t (175) = −4.62, $p < .001$
Mean BSI score	32.8	SD = 12.25	40.4	SD = 13.99	t (195) = 4.06, $p = .0001$
Has a self-reported physical disability	24.2%	(n = 24)	44.8%	(n = 43)	$X^2(1) = 9.13$, $p = .003$
Diagnoses (not mutually exclusive)					
Schizophrenia	29.9%	(n = 26)	21.7%	(n = 27)	$X^2(1) = 1.64$, $p = .201$
Bipolar disorder	23.0%	(n = 20)	20.6%	(n = 20)	$X^2(1) = 0.15$, $p = .70$
Major depressive disorder	31.0%	(n = 27)	50.5%	(n = 49)	$X^2(1) = 7.18$, $p = .007$
Anxiety disorder	23.0%	(n = 20)	57.7%	(n = 56)	$X^2(1) = 22.84$, $p < .0001$
Substance use disorder	11.5%	(n = 10)	27.8%	(n = 27)	$X^2(1) = 7.62$, $p = .006$
Other	34.7%	(n = 35)	28.9%	(n = 28)	$X^2(1) = 0.52$, $p = .47$

Table 2 Odds ratios for healthcare service use by type of services

	Psychiatric hospitalizations		Emergency room visits		Primary care visits		Psychiatrist visits		Medications		Community support visits	
	Unadjusted OR (95% CI)	Adjusted OR (95% CI)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)	Unadjusted OR (95% CI)	OR (95% CI)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)	Unadjusted OR (95% CI)	OR (95% CI)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Social enterprise	0.29 (0.11, 0.78)	0.14 (0.037, 0.53)	0.51 (0.28, 0.96)	0.58 (0.27, 1.25)	1.25 (0.67, 2.33)	0.96 (0.44, 2.10)	1.25 (0.70, 2.22)	1.18 (0.56, 2.49)	1.09 (0.62, 1.92)	1.26 (0.63, 2.54)	0.39 (0.22, 0.69)	0.41 (0.20, 0.85)
BSI		1.058 (1.015, 1.102)		1.03 (1.01, 1.06)		1.00 (0.98, 1.03)		1.01 (0.99, 1.04)		1.00 (0.97, 1.02)		1.03 (1.00, 1.06)
Disability		0.80 (0.27, 2.42)		1.10 (0.53, 2.27)		1.23 (0.58, 2.62)		0.51 (0.24, 1.08)		1.14 (0.58, 2.24)		1.11 (0.54, 2.30)
Education		1.06 (0.34, 3.36)		1.17 (0.56, 2.45)		1.00 (0.48, 2.11)		1.62 (0.79, 3.31)		0.91 (0.47, 1.78)		1.63 (0.80, 3.31)
Substance use disorder		0.81 (0.19, 3.44)		1.16 (0.49, 2.72)		0.84 (0.36, 1.97)		0.99 (0.41, 2.36)		0.77 (0.35, 1.70)		0.86 (0.36, 2.05)
Anxiety disorder		0.30 (0.08, 1.11)		0.72 (0.33, 1.60)		0.38 (0.17, 0.86)		1.32 (0.60, 2.94)		1.05 (0.51, 2.16)		1.23 (0.57, 2.65)
Major depressive disorder		0.81 (0.24, 2.70)		1.56 (0.74, 3.27)		1.01 (0.47, 2.18)		0.93 (0.43, 1.99)		1.11 (0.56, 2.22)		1.88 (0.90, 3.90)
Schizophrenia		4.18 (1.37, 12.80)		0.82 (0.36, 1.88)		0.84 (0.37, 1.90)		6.85 (3.04, 15.41)		2.67 (1.20, 5.94)		3.24 (1.41, 7.46)
Bipolar disorder		1.43 (0.41, 5.06)		0.99 (0.43, 2.28)		1.43 (0.58, 3.52)		1.33 (0.58, 3.07)		1.61 (0.73, 3.57)		1.05 (0.46, 2.40)

for likelihood of emergency room visits but this difference did not persist when the estimate was adjusted for BSI, presence of self-reported physical disability, educational attainment, and type of self-reported diagnosis.

Table 3 contains the estimated mean costs for each type of healthcare service. The mean sum of the costs did not significantly differ between the two groups (t (183.88) = 0.96, p = .34). However, there were significant differences between the two groups for specific healthcare services. Compared to the non-employed group, the mean costs of emergency room (t (111.52) = 2.40, p = .018) and community mental health supports (t(178.24) = 3.15, p = .002) were lower for the social enterprise group. However, the mean cost of psychiatrist visits was significantly higher for the social enterprise group (t (184.68) = − 2.00, p = .047). These differences were consistently significant after adjusting for the contributions of BSI, presence of self-reported physical disability, and educational attainment.

Overall, the sum of costs for these healthcare services were lower for the social enterprise group than for the non-employed group (t (184.51) = 1.29, p = .20). However, the difference was not statistically significant.

Discussion

The results indicate that there were significant differences between the social enterprise group and the non-employed group related to educational attainment, severity of psychiatric symptoms, types of diagnoses, and physical disability with the non-employed group being relatively more disadvantaged than those employed by social enterprises. In addition, this group of non-employed people would likely have had a relatively more difficult time finding employment. However, because we used cross-sectional data, we do not know whether those in the social enterprises started out at a similar level of disability and because of the positive benefits of employment, they became healthier. Or, whether they started out healthier and that is why they are employed. Thus, an important future line of inquiry would be to understand the long-term effects of employment on this disadvantaged population of aspiring workers.

Not unexpectedly, the group of workers in social employment reported higher monthly incomes when compared to those not working. However, in absolute terms, the mean monthly income of this working group was below Statistics Canada's low-income cut-offs. For example, to be above the low-income cut-off, a single-person household would need to have a monthly income greater than $2027 [$24,328/12 months] (Statistics Canada 2015b). This suggests that although employed, social enterprise employees in these types of social enterprises experienced a low standard of living. This could indicate that employment may not necessarily immediately lead to a higher standard of living. Future studies could examine whether there are differences in the standard of living experienced by workers in the various types of social enterprise models.

We did not observe significant differences in the total healthcare costs between the two groups. However, we did find significant differences in use by healthcare service types and types of healthcare costs among people with mental health disorders in social enterprises versus those who are not working but looking for work. Our findings indicate that those in the social enterprise group are less likely to be hospitalized for psychiatric disorders. But, the cost data suggest that once people are hospitalized, there is no significant difference in the intensity of their use. This suggests that employment in social enterprises may help people stay out of hospital. But, once they are hospitalized, both groups receive similar intensity of services.

In addition, although there is no difference in the likelihood of the two groups having an emergency room visit, the cost information indicates that those who are not employed are significantly more likely to use more visits. Furthermore, our results suggest that there is no difference between the two groups in terms of the probability of having a psychiatrist visit. However, the cost data indicates that those in social enterprises had significantly more visits with psychiatrists. This could suggest that psychiatrist visits are substitutes for emergency room visits.

Table 3 Mean costs of healthcare service use by groups

	Social enterprise		Not employed		Statistical tests
	Mean	SD	Mean	SD	
Psychiatric hospitalizations	$491.78	3175.00	$757.43	2602.93	t (188.56) = 0.64, p = .52
Emergency room visits	$97.30	229.08	$290.05	755.45	t (111.52) = 2.40, p = .018
Primary care visits	$188.87	247.29	$296.10	549.06	t (130.55) = 1.75, p = .082
Psychiatrist visits	$232.71	419.32	$127.77	312.64	t (184.68) = − 2.00, p = .047
Medications	$900.61	3109.13	$467.62	1791.17	t (161.32) = − 1.20, p = .232
Community supports visits	$1151.29	1556.50	$1929.24	1889.80	t (184.24) = 3.15, p = .002
Sum of costs	$3,087.64	4957.92	$3902.00	3792.71	t (184.51) = 1.29, p = .20

We also found that those employed in social enterprises are less likely than those who are not to use community mental health programs. This suggests that social enterprises may provide more than employment and could be substituting for these programs. In addition to employment, the social enterprises may encourage workers to use services that promote their health (i.e., psychiatrist visits). This in turn, decreases their need for greater intensity services such as would be received in hospitals or emergency rooms.

Limitations

One of the primary limitations of these analyses is the use of non-randomized cross-sectional data. This prevents us from making comments about causality. That is, we cannot answer the question of whether social enterprise employment causes workers to be healthier. Given that low income is related to poor mental health (Sareen et al. 2011), the low-income status of the social enterprise group would suggest that they should be in poor mental health. Yet, the mental health status of those who are employed is relatively higher than those who are not employed. It should also be noted that, depending on working conditions, there is evidence that working can also contribute to poor mental health (Butterworth et al. 2013, 2011). But, the differences in our two groups suggest that this is not the case for workers in social enterprises. This raises the question of whether social enterprises contribute to the mental health of people with SMDs. Indeed, the positive work environment of social enterprises may represent job quality that promotes mental health (Butterworth et al. 2013, 2011). It will be important for future work to explore this relationship.

In addition, our results may be related to the model used by the social enterprises that participated in this study. It may be that other models may have different results. It will be important to understand if outcomes differ based on the social enterprise model. Our results point to questions that randomized longitudinal studies could answer by examining the contribution of social enterprises to mental health.

Another potential limitation of our estimates is related to the costs related to medication and hospitalization. The data that were collected only reflect filled prescriptions. It was not possible to verify whether the medications were actually taken. This could have affected costs if one group was more likely not to take their medications and in turn, medication non-adherence was related to other costs such as emergency room visits and hospitalizations.

An additional limitation of our study is the focus on psychiatric hospitalizations. As such, it potentially underestimates total healthcare costs if participants were hospitalized for non-psychiatric causes. It may be that social enterprises also promote physical health and thereby decrease hospitalizations for physical health reasons. Indeed, there was a significant difference between the two groups with regard to somatic symptom distress. This would suggest a difference in physical health status. Future inquiry could consider how they also contribute to hospitalizations related to physical health.

Another potential limitation relates to the generalizability of the results. Because we could not randomize study participants into the two groups, our data are subject to selection bias. That is, those who volunteered may not be representative of their sub-populations. For example, it may be that only the healthiest volunteered to participate. To address this potential limitation, future studies could consider conducting a population-based survey of people who are employed in social enterprises and those who are not employed but who are seeking work.

Conclusions

Our results indicate a significant difference in the healthcare use patterns of those with mental disorders who are employed in social enterprises versus those who are not employed and looking for work. Our group of social enterprise workers had lower costs for high intensity healthcare services. This suggests that there could be cost-offsets associated with social enterprises for the healthcare payers.

At the same time, employment in social enterprises does not necessarily elevate workers from low-income status. This points to several questions for future research. Given employment's role in recovery, it will be important to understand social enterprises' place in the spectrum of employment for people with psychiatric disorders. Is its role as a type of place for rehabilitation and a substitute for community mental health programs? Does it serve as an employer for people who would otherwise be marginalized from the labor force? Should it be seen as a temporary stepping stone to the competitive labor market?

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