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ORIGINAL PAPER

Analysis of the Association of Clubhouse Membership with Overall Costs of Care for Mental Health Treatment

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Abstract We examined whether frequency of attendance at the B'More Clubhouse was associated with lower mental health care costs in the Medicaid database, and whether members in the B'More Clubhouse (n = 30) would have lower mental health care costs compared with a set of matched controls from the same claims database (n = 150). Participants who attended the Clubhouse 3 days or more per week had mean 1-year mental health care costs of US $5697, compared to $14,765 for those who attended less often. B'More Clubhouse members had significantly lower annual total mental health care costs than the matched comparison group ($10,391 vs. $15,511; $p < 0.0001$). Membership in the B'More Clubhouse is associated with a substantial beneficial influence on health care costs.

Keywords Clubhouse · Mental health · Cost · Medicaid

Introduction

The *Clubhouse Model* of psychiatric rehabilitation began in New York City with Fountain House (Beard et al. 1982), and its program and structure has been adopted in many locations around the world. The program includes membership and associated social activities, the work-ordered day, and a program of transitional employment. The clubhouse model is recognized as an effective program by the National Registry of Evidence-Based Programs and Practices (Substance Abuse and Mental Health Services Administration 2013).

The B'More Clubhouse was established in Baltimore in 2009 and was certified by the International Center for Clubhouse Development in 2012 (Macias et al. 1999, 2001). This B'More Clubhouse Follow-up Project was conducted to examine the benefits of belonging to the Clubhouse. The present study evaluates the following hypotheses: (1) Frequency of attendance at the B'More Clubhouse would be associated with lower mental health care costs, and; (2) Members in the B'More Clubhouse would have lower mental health care costs compared with a matched comparison group. Three of four prior studies assessing the effect of clubhouse membership on medical expenditures of one form or another showed a statistically significant benefit (Beard et al. 1963; Warner et al. 1999; Wilkinson 1992): a fourth study did not show a statistically significance benefit, but was rather small (Accordino and Herbert 2000). To our knowledge, this is the first study to report on the relationship between Clubhouse membership and overall costs for mental health treatment for Medicaid recipients.

Methods

Study Sample

We attended several meetings during the day at the B'More clubhouse over several weeks to explain the study to members of the B'More clubhouse. The overall membership of the B'More clubhouse was about 150, and

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daily attendance during this period was about 15. After the meetings and discussions, questionnaires were left for members to pick up if they were interested. Members mailed back the questionnaire and, by return mail to their home address, received a $25 gift card at a local grocery or department store. This procedure recruited 58 Clubhouse members for the B'More Clubhouse Follow-up Project in early 2014. We obtained written informed consent from the 58 Clubhouse members to access records showing what mental health services they have used in the public mental health system (PMHS) claims data from the maryland mental hygiene administration (MHA). Records for 30 of the 58 Clubhouse members who completed a survey could be located in the PMHS database and were included in the subsequent matching process; 28 members were not included in the matching process because they were not fully funded by maryland medical assistance during our study period (2010–2013). Five controls were matched to each member (5:1 matching) from the same database according to our matching criteria: (i) same sex as the Clubhouse member; (ii) age within 5 years of the Clubhouse member; (iii) most recent mental health treatment episode within 3 months of the Clubhouse member's most recent mental health treatment; and (iv) same psychiatric diagnostic group in the most recent mental health treatment as the Clubhouse member. The most recent inpatient mental health claim was used if a patient had one over the 3-year period. Otherwise, the most recent outpatient mental health claim was used. The search period of age and recency of mental health care was narrowed down if we found more than five controls for each case.

The research protocols were approved by the Institutional Review Boards at the Johns Hopkins University Bloomberg School of Public Health and the Maryland Department of Health and Mental Hygiene.

Cost Assessment

We obtained Medicaid reimbursements (costs) for mental health and substance abuse services provided and paid for each person for the years 2010–2013. Data on inpatient costs, outpatient costs (including traumatic brain injury treatment), and other costs from specific mental health services (Baltimore City mental health psychiatric case management program, crisis services, emergency services, mobile treatment, assertive community treatment, partial hospitalization, psychiatric rehabilitation, residential rehabilitation, respite care, and supported employment) were obtained. However, few Clubhouse members used these other specific mental health services and their costs were minimal, therefore only inpatient, outpatient, psychiatric rehabilitation, and total costs were further considered. Costs for each Clubhouse member and matched control persons were aggregated across a single year after each person's most recent mental health treatment episode. Costs were adjusted in 2014 dollars using 3% annual inflation rate as recommended by the panel on cost effectiveness in health and medicine (Weinstein et al. 1996).

Measures

We used standard questions to obtain information from the participants on age and gender (available also with Medicaid claims data). Participants completed a one-page questionnaire about how they came to join the Clubhouse and what their membership in the Clubhouse means to them. Participants were asked, "When did you first come to the B'More Clubhouse?", "How did you learn about the Clubhouse?", "About how many days per week do you visit the Clubhouse", "About how many hours per day do you spend at the Clubhouse when you are there for that day?", "About how many clubhouse members do you count among your friends?", and "What aspects of the Clubhouse do you value the most?".

Primary *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD-9-CM) diagnostic codes from Medicaid claims were used to match Clubhouse members to controls in the following categories: schizophrenia (295), bipolar disorder (296.0, 296.4—296.8), depression with psychotic features (296.24, 296.34), major mood disorder (296.10—296.23, 296.25—296.33, 296.35—296.39, 296.9), other psychotic disorders (297—299), organic brain disorder (290, 293—294, 310), substance use disorder (291—292, 303—304), neuroses (300, 308—309, 311), personality disorder (301—302, 312—313, 314—315), developmental disabilities (317—319).

Analytic Strategy

Our analyses proceeded in two stages. We compared all participants included in the cost analyses to those whose records were not located in the Medicaid database on sociodemographic measures and Clubhouse questionnaires. We carried out *t* tests for continuous variables and Fisher's exact tests for categorical ones in order to identify potential covariates for use in adjusted models in subsequent stages of the analysis. In the second stage of the analysis, we focused on whether (1) frequency of attendance at the B'More Clubhouse was associated with lower mental health care costs, and (2) members in the B'More Clubhouse had a different level of mental health care costs compared with the matched controls. Linear regressions with log-transformed data were used to deal with skewness of medical cost measures in the upper tail. For all analyses we used a level of significance set at $\alpha = 0.05$. SAS version 9.4 was used to carry out analyses (SAS Institute Inc., Cary, North Carolina).

Results

Participant Characteristics

The 30 Clubhouse members with cost data available in the public mental health database did not differ significantly from all 58 participants in their responses to the questionnaire, as shown in Table 1. For example, most members were referred to the clubhouse by a therapist, in both groups; about half of both groups visited the clubhouse three or more times per week; and the most valuable aspect of the clubhouse for both groups was reported to be meetings, discussions, and friendships (Table 1). There was a close match of characteristics in the 30 clubhouse members with their selected comparison subjects in the database as Table 2 shows.

Mental Health Care Costs

Unadjusted comparisons of mental health care costs according to frequency of attendance at the B'More Clubhouse are presented in Table 3. The sample size for this comparison is 29, not 30, because one Clubhouse member did not report this on the questionnaire. Participants who attended the Clubhouse 3 days or more per week (N = 13) had mean 1-year mental health care cost total of US $5,697 (standard deviation (SD) = $9,607), compared to $14,765 (SD = $33,366) for those who attended less than 3 days per week (N = 16). In addition, frequent attenders had lower median mental health care costs ($1384; 25th–75th percentile, $179–$8,469) than intermittent attenders ($5461; 25th–75th percentile, $1111–$14,469). Frequent attenders had lower mean 1-year inpatient and outpatient costs as well (inpatient: $1088 vs. $8251; outpatient: $1473 vs. $4094). The costs for one particular clubhouse member were more than $100,000 a year for his inpatient treatment. After excluding this high inpatient utilizer, mean inpatient costs were similar between the two groups. But mean 1-year outpatient costs of frequent attenders were still lower compared to intermittent attenders ($1473 vs. $2757) though the statistical tests were not administered due to sample size issues.

Unadjusted comparisons of mental health care costs between B'More Clubhouse members and the matched comparison subjects are presented in Table 4. The Clubhouse members had significantly lower average annual total mental health care costs ($10,391; SD = $25,244) than similar people who were not members ($15,511; SD = $15,370). In addition, Clubhouse members had significantly lower median mental health care costs ($2,394;

Table 1 Description of the B'More Clubhouse members

Questionnaire	Members with questionnaires (n = 58)	Members with cost data (n = 30)
Sociodemographic characteristics		
Mean (SD) age[a], years	48.9 (11.5)	50.2 (10.5)
Male	34 (58.6)	18 (60.0)
First visit to B'MORE Clubhouse		
<2010	4 (6.9)	3 (10.0)
2010–2011	21 (36.2)	11 (36.7)
2012–2013	28 (48.3)	13 (43.3)
Referral source[b]		
Friend	7 (12.1)	2 (6.7)
Therapist	32 (55.2)	18 (60.0)
Member	1 (1.7)	1 (3.3)
Clinic	7 (12.1)	5 (16.7)
Hospital	7 (12.1)	3 (10.0)
Other	10 (17.2)	5 (16.7)
Number of visits per week		
0	4 (6.9)	2 (6.7)
1–2	23 (39.7)	14 (46.7)
3+	29 (50.0)	13 (43.3)
Number of hours per week in the Clubhouse		
0	2 (3.4)	1 (3.3)
1–2	14 (24.1)	7 (23.3)
3–4	23 (39.7)	14 (46.7)
5+	19 (32.8)	8 (26.7)
Number of friends in the Clubhouse		
0	7 (12.1)	5 (16.7)
1–2	7 (12.1)	1 (3.3)
3–4	21 (36.2)	11 (36.7)
5+	23 (39.7)	13 (43.3)
Valuable aspects of the Clubhouse[c]		
Mealtimes	24 (41.4)	12 (40.0)
Holidays	17 (29.3)	10 (33.3)
Meetings and discussions	29 (50.0)	16 (53.3)
Computers	25 (43.1)	15 (50.0)
Help with employment	20 (34.5)	10 (33.3)
Help with benefits	9 (15.5)	6 (20.0)
Work ordered day	19 (32.8)	9 (30.0)
Friendships	28 (48.3)	15 (50.0)
Help with education	10 (17.2)	4 (13.3)
Social outings	24 (41.4)	15 (50.0)
Help with housing	6 (10.3)	3 (10.0)

Values are numbers (percentages) unless stated otherwise

[a]Age on December 31st, 2014

[b]Check-all-that-apply questions

[c]Check-three questions

Table 2 Characteristics of the B'More Clubhouse members vs. matched comparison group

Characteristics	Members (n = 30)	Matched controls (n = 150)	Test of equality across groups p (*df*)[a]
Sociodemographic			
Mean (SD) age[b], years	47.7 (10.6)	47.3 (10.9)	0.84 (149)
Male	18 (60.0)	90 (60.0)	[c]
Setting of most recent treatment			
Inpatient	4 (13.3)	20 (13.3)	[c]
Outpatient	26 (86.7)	130 (86.7)	[c]
Primary psychiatric diagnosis			
Schizophrenia	8 (26.7)	40 (26.7)	[c]
Bipolar disorder	5 (16.7)	25 (16.7)	[c]
Depression with psychotic features	1 (3.3)	5 (3.3)	[c]
Major mood disorder	9 (30.0)	45 (30.0)	[c]
Other psychotic disorders	2 (6.7)	10 (6.7)	[c]
Neuroses	5 (16.7)	25 (16.7)	[c]

Unless noted otherwise, entries represent numbers with percentages based on the total number in the corresponding column in parentheses

SD standard deviation

[a]F test from linear regression with random effects to account for within-control clustering

[b]Age at the mental health treatment

[c]Perfectly matched

Table 3 1-year mental health care cost of the B'More Clubhouse members

Cost	About how many days per week do you visit the clubhouse?	
	0, 1, 2 (n = 16)	3+ (n = 13)
Total		
Mean (SD)	$14,765 ($33,366)	$5697 ($9607)
Median (25th–75th percentile)	$5461 ($1111–$14,469)	$1384 ($179–$8469)
Inpatient		
Mean (SD)	$8251 ($28,061)	$1088 ($3924)
Median (25th–75th percentile)	$0 ($0–$1066)	$0 ($0–$0)
Outpatient		
Mean (SD)	$4094 ($6227)	$1473 ($2745)
Median (25th–75th percentile)	$1687 ($71–$5594)	$517 ($60–$1417)
Psychiatric rehabilitation		
Mean (SD)	$1482 ($3019)	$1508 ($2542)
Median (25th–75th percentile)	$0 ($0–$1180)	$0 ($0–$2422)

All costs were standardized to December 31st, 2014 figures using 3 % discount rate

SD standard deviation

25th–75th percentile, $709–$11,020) than their matched controls ($12,576; 25th–75th percentile, $2406–$20,274). Inpatient, outpatient, and psychiatric rehabilitation costs were not significantly different between the two groups (Table 4). The results were not significantly changed when the high inpatient utilizer was excluded.

Discussion

These results show that costs of treatment for mental health care are lower for Medicaid-eligible members of the B'More Clubhouse than a carefully matched comparison group. The results must be considered in the context of potential study limitations. First, many of the B'More Clubhouse participants did not qualify for Medicaid. However, the baseline demographic characteristics and survey results were similar to those of the sample excluded from the cost analyses. Second, the analysis is limited in terms of the sample, and also in terms of the health care costs included. The sample of clubhouse members was voluntary and it is difficult to know how members who volunteered to be in the study differ from clubhouse members who did not volunteer. The cost data in this study from the Maryland PMHS are limited by the geographical characteristics of the study sample with all the limitations common to the use of administrative data sets (Hannan et al. 1992; Weintraub et al. 1999). Medicare recipients, who may be among the most disabled, were not included in the study because their costs were not available. However, the limitations apply identically to both the Clubhouse members and the matched comparison subjects in the analysis. Finally, it may be not all key characteristics were balanced between the Clubhouse members and matched controls: there may be unmeasured confounding variables such as income, employment, disability, disabling comorbidity, and incarceration which may have biased our results. Even with these caveats this small study suggests that health care costs are lower for people who participate in the B'More clubhouse, presumably due to the beneficial effects of the membership on mental health. The beneficial effects may have to do with the social nature of the clubhouse, reducing loneliness and enhancing self-esteem; the work-ordered day which reduces boredom and facilitates organized thinking and planning; the transitional employment program which generates salary, promotes social

Table 4 1-year mental health care cost of the B'More Clubhouse members vs. matched controls

Cost	Members (n = 30)	Matched controls (n = 150)	Test of equality across groups p (*df*)[a]
Total			
Mean (SD)	$10,391 ($25,244)	$15,511 ($15,370)	<0.0001
Median (25th–75th percentile)	$2394 ($709–$11,020)	$12,576 ($2406–$20,274)	–
Inpatient			
Mean (SD)	$4872 ($20,668)	$5236 ($10,709)	0.11
Median (25th–75th percentile)	$0 ($0–$0)	$0 ($0–$6986)	–
Outpatient			
Mean (SD)	$2869 ($4995)	$3047 ($3897)	0.74
Median (25th–75th percentile)	$994 ($60–$2615)	$1234 ($0–$4985)	–
Psychiatric rehabilitation			
Mean (SD)	$1444 ($2732)	$3765 ($10,304)	0.59
Median (25th–75th percentile)	$0 ($0–$2360)	$0 ($0–$806)	–

All costs were standardized to December 31st, 2014 figures using 3 % discount rate

SD standard deviation

[a] *t* test from linear regression with log transformed values

networking, and enhances self-esteem; and a range of other tangible and intangible positive effects on the mental health of the members.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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