

Associations Between Physical Health Limitations and Community Participation Among People With and Without Serious Mental Illnesses

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Objective: Research has suggested that individuals with serious mental illnesses are not as physically healthy as the general population and are more likely to experience physical illnesses such as diabetes, obesity, and cardiovascular and respiratory diseases. Less is known about how physical health may be related to community participation among individuals with serious mental illnesses, although research with adults in the general population has suggested strong negative associations between health impairments and engagement in a variety of activity domains.

Methods: In this study, the authors drew from two national data sets to examine the relationship between physical health impairments and community participation among

300 participants with serious mental illnesses and 300 participants without serious mental illnesses.

Results: For participants in both groups, physical health concerns and use of mobility aids were associated with lower reported rates of community participation.

Conclusions: Findings shed light on the complex association between physical health impairments and community participation while also suggesting the need to focus on other potential barriers to participation among individuals with serious mental illnesses.

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Research has suggested that individuals with serious mental illnesses are not as physically healthy as the general population and are more likely to experience illnesses such as diabetes, obesity, and respiratory diseases (1–3). In a study of Medicaid claims of people with serious mental illnesses, 75% had a single chronic health condition, and 50% had two or more chronic health conditions (4). Individuals with schizophrenia in particular have more risk factors for cardiovascular disease, including smoking, obesity, and lack of exercise (5–7).

Strikingly, individuals served by the public mental health system die an average of 25 years earlier than the general public (8). Colton and Manderscheid (9) found that public mental health clients had a higher relative risk of death compared with the general population, with the actual number of deaths in each state ranging from 1.2 to 4.9 times higher than the number expected. Similarly, findings from a recent meta-analysis indicated that the years of potential life lost among individuals with serious mental illnesses ranged from 1.4 to 32 years, with a median of 10 years (10).

The impact of physical health on the lives of individuals with serious mental illnesses extends beyond increased mortality rates. There is also a concern that health concerns

may limit community participation among individuals with serious mental illnesses, such as their ability to work, engage in leisure and social activities, and otherwise live in the

HIGHLIGHTS

- This study is the first to examine associations between self-reported physical health and community participation among individuals with serious mental illnesses.
- Participants with serious mental illnesses were more likely to report health conditions that interfered with their functioning than participants without serious mental illnesses.
- Physical health concerns and use of mobility aids were associated with lower reported rates of community participation among participants with and without serious mental illnesses.
- Physical health appears to be more strongly associated with community participation among participants without serious mental illnesses, suggesting that other factors may be more important to consider when addressing barriers to participation among individuals with serious mental illnesses.

community in a manner similar to everyone else. There is ample evidence suggesting that community participation is a medical necessity itself, having a positive impact on the physical, cognitive, and mental health of individuals with serious mental illnesses (11, 12). Physical health issues are associated with limited energy and pain, which could reduce enthusiasm for participation and lead to diminished stamina. Moreover, attempts to address health concerns through medical appointments, pharmacy trips, and attention to health behaviors can be exhausting and further limit time and energy that could be devoted to meaningful participation in the community.

Research with individuals in the general population has illustrated the important role of physical health in facilitating community participation. Schultz and Edington (13) found that both the presence of specific health conditions as well as more general health risk factors contributed to decreased job performance. Previous studies have also shown that subjective health affects participation in leisure activities (14). Finally, individuals have discussed how challenging it can be to engage in activities and create a structure for the day because of chronic health problems and mobility issues (15). Research on the relationship between the presence of physical health conditions and community participation among individuals with serious mental illnesses is scant. Examining the potential for such a relationship could advance researchers' knowledge of factors affecting participation in this population and illuminate the full benefits of interventions targeting physical health.

Drawing from a larger study examining individual and environmental factors related to community participation among 300 adults with serious mental illnesses and 300 adults in the general population (16–18), this study examined associations between physical health indicators and community participation. It was hypothesized that physical health limitations and mobility impairments would be associated with reduced levels of participation among adults with serious mental illnesses, a pattern also seen among other adults in the general population. Given the prevalence of physical health issues in this population, such a relationship could be a potent additional explanation to the limited community participation of these individuals.

METHODS

Participants

Participants with serious mental illnesses. This sample consisted of 300 participants with serious mental illnesses receiving services at community mental health centers throughout the United States. Participants were recruited from 21 community mental health centers in 15 states (see online supplement). Organizations were chosen on the basis of an attempt to maximize geographic diversity and levels of urbanicity. We reached out to potential organizations via e-mail campaigns, listservs, and personal communications.

Partnering organizations distributed flyers, and interested participants called to be screened. Inclusion criteria were as follows: adults ages 18–65, self-reported diagnosis of schizophrenia spectrum or major affective disorder, self-reported limitations related to mental illness in the past 12 months (determined by asking, “Has this mental health or emotional problem substantially interfered with or limited your ability to participate in any major life activities within the past 12 months?”), self-reported eligibility for Medicaid or state-equivalent benefits, and willingness to provide an address. Individuals were excluded if they had a legal guardian or were unable to provide consent (see online supplement).

Participants without serious mental illnesses. Participants in this sample were 300 adults recruited from the Truven Health Analytics PULSE survey, the largest privately funded health survey using phone and Internet sampling methods (19) (see online supplement). The survey involves a random sample of the U.S. population that is geographically stratified, resulting in 7,000 monthly respondents who answer health-related questions. Additional items can be added to the survey for a fee, as was done for this study. All respondents were asked, “Have you ever been told by a psychiatrist or mental health professional that you have major depression, bipolar disorder, schizophrenia, or schizoaffective disorder?” Truven Health Analytics provided data from 40,831 individuals who were contacted between September 2014 and December 2015. For each of these 9 months, individuals who reported not having a psychiatric diagnosis were sorted in random order and put on a list. Working down the list in blocks of 40, research staff called each individual up to four times before moving to the next block. Inclusion criteria were as follows: adults ages 18–65, no lifetime psychiatric diagnosis, and willingness to provide an address (see online supplement).

Measures

Physical health functioning. To measure perceived physical health functioning, we used the 12-item Short-Form Health Survey (SF-12; 20). Participants were asked about their health in the past month (“Thinking about the past 4 weeks, have you accomplished less than you would like as a result of your physical health?”) and responded using Likert-based scales (not at all, a little bit, moderately, quite a bit, extremely). Optum scoring software version 4.5 was used to calculate three SF-12 subdomains (physical functioning, role functioning-physical, and bodily pain) and a summary measure called the physical component score. Internal reliability for the Physical Component Score was 0.84 for participants with serious mental illnesses and 0.86 for participants without serious mental illnesses.

Self-reported physical health conditions. Participants were asked a yes-no question about whether they had any physical health conditions that substantially interfered with their life

activities in the past 4 weeks. If participants responded in the affirmative, we asked them to specify all conditions interfering with functioning in the past 4 weeks. We consulted with a disability benefits specialist to organize conditions into 10 categories: back problems; bone, joint, and muscle conditions; chronic pain; cancer; diabetes; digestive issues; heart and cardiovascular disease; nervous system disorders; respiratory issues; and “other” conditions.

Use of mobility aids. Participants were asked a yes-no question about whether they used mobility aids such as a walker, wheelchair, or crutches.

Community participation. We used a 22-item version of the Temple University Community Participation (TUCP) measure (21). The measure asks participants to indicate how many days in the past 30 they participated in 22 different areas (going to a restaurant, going to a place of worship), whether they view their participation in each area as important, and whether they participated in each area as frequently as desired. The TUCP measure has demonstrated good test-retest and intermethod reliability (21, 22) as well as construct validity (23). Participants' responses to the 22 TUCP items were used to calculate the following: total number of participation days, calculated as the sum of participation days across all 22 items; total number of participation areas across all 22 items with at least 1 day of participation completed; and sufficiency of participation, or the percentage of important activity areas in which the person participated as much as desired.

Procedures

After providing informed consent, participants completed a survey with the measures described earlier, along with questions about psychiatric symptoms and neighborhood experiences. Interviews lasted for about an hour, and responses were entered into an online survey platform by research assistants. Participants received \$20 for their participation. The study was approved by the institutional review board of the sponsoring university as well as review boards within departments of mental health when required by partnering agencies.

Data Analysis

After calculating proportions of physical health conditions indicated by participants, independent-sample *t* tests and chi-square tests were conducted to examine differences in physical health between participants with and without serious mental illnesses. Pearson and Spearman correlations and Fisher's *r*-to-*z* transformation were used to examine associations between physical health and community participation. Data were analyzed by using SPSS, version 24.

TABLE 1. Physical health conditions interfering with functioning reported by participants with and without serious mental illnesses

Condition	With serious mental illnesses (N=300)		Without serious mental illnesses (N=300)		χ^2 ^a	p
	N	%	N	%		
Back problems	12	4	5	2	2.97	.09
Bone, joint, and muscle conditions	58	19	33	11	8.10	<.01
Chronic pain	13	4	12	4	.04	.84
Cancer	3	1	2	1	.17	.68
Diabetes	14	5	3	1	7.35	<.01
Digestive issues	18	6	5	2	7.64	<.01
Heart and cardiovascular disease	18	6	8	3	4.02	<.05
Nervous system disorders	20	7	13	4	1.57	.21
Respiratory issues	25	8	18	6	1.23	.27
Other	25	8	11	4	5.79	<.05

^a df=1.

RESULTS

Demographic Characteristics

Participants with serious mental illnesses. Participants with serious mental illnesses had a mean \pm SD age of 46.0 ± 11.3 ; 174 (60%) were female, and 126 (40%) were male. Most participants were white (N=195, 65%), 84 (28%) were black, 21 (7%) were Latino or Hispanic, 3 (1%) were Asian, 3 (1%) were Native Hawaiian or Pacific Islander, and 12 (4%) were Native American. Percentages total more than 100% because some participants reported more than one race-ethnicity. A total of 230 participants (77%) reported a mood disorder, whereas 128 (43%) reported a schizophrenia spectrum disorder. Percentages total more than 100% because some participants reported more than one diagnosis. Most participants (N=234, 78%) had a high school degree or higher; 96 (32%) were married or had a significant other; 48 (16%) were working for pay; and 177 (59%) resided in their own apartment, home, or trailer. Of the remaining participants, 123 (41%) resided in someone else's home, a boarding home, or a residential care facility, and five (2%) were homeless.

Participants without serious mental illnesses. Participants without serious mental illnesses had a mean age of 51.0 ± 11.3 ; 164 (55%) were female, and 136 (45%) were male. Most participants were white (N=247, 82%), 30 (10%) were black, 15 (5%) were Latino or Hispanic, six (2%) were Asian, and nine (3%) were Native American. Most participants (N=285, 95%) had a high school degree; 195 (65%) were married or had a significant other; 180 (60%) were working; and 282 (94%) resided in their own apartment, home, or trailer. Of the remaining participants, 18 (6%) resided in someone else's home, and one (0.3%) was homeless.

Physical Health Comparisons

Participants with serious mental illnesses were more likely to report having a physical health condition that interfered with their life activities in the past 4 weeks (N=149, 50%) compared with participants without serious mental illnesses

TABLE 2. Scores on SF-12 physical health domains between participants with and without serious mental illnesses^a

Domain	With serious mental illnesses (N=300)		Without serious mental illnesses (N=300)		t	df	p
	M	SD	M	SD			
Physical functioning	60.82	37.84	79.35	25.26	-6.19	595	<.001
Role functioning-physical	48.70	28.13	76.15	29.75	-11.59	596	<.001
Bodily pain	55.68	35.59	75.17	29.47	-7.27	592	<.001
Physical component score	44.54	10.71	48.26	11.88	-4.02	595	<.001

^a SF-12, 12-item Short-Form Health Survey (20). Possible scores range from 0 to 100, with higher scores indicating better physical health.

(N=84, 28%; $\chi^2=30.03$, $df=1$, $p<0.001$). Those who reported a health condition also reported having significantly more conditions than participants without serious mental illnesses (2.01 ± 1.53 compared with 1.55 ± 1.22 ; $t=2.35$, $df=225$, $p<0.05$). Table 1 includes group comparisons for the 10 categories of physical health conditions examined in this study. Compared with participants without serious mental illnesses, participants with serious mental illnesses were significantly more likely to indicate bone, joint, and muscle conditions; diabetes; digestive issues; heart and cardiovascular disease; and other physical health domains (Table 2). There were no significant differences in use of mobility aids. A total of 49 (16%) participants with serious mental illnesses reported using mobility aids, compared with 42 participants without serious mental illnesses (14%; $\chi^2=0.66$, $df=1$, $p=0.41$).

Associations Between Physical Health and Community Participation

Physical health limitations. Among participants with serious mental illnesses, there were no significant differences in community participation between participants who reported physical health limitations and those who did not (days: 48.52 ± 35.32 compared with 52.47 ± 44.84 ; $t=0.84$, $df=296$, $p=0.40$; areas: 7.55 ± 3.53 compared with 7.54 ± 3.49 ; $t=-0.02$, $df=296$, $p=0.99$). However, sufficiency of participation was significantly lower among those who reported health issues compared with those without limitations (0.34 ± 0.23 compared with 0.49 ± 0.26 ; $t=5.56$, $df=296$, $p<0.001$). The total number of conditions reported by participants was significantly negatively associated with sufficiency ($r_s=-0.26$, $p<0.01$) but not with participation days or areas.

Among participants without serious mental illnesses, those with physical health limitations had significantly fewer participation days than participants without limitations (54.58 ± 34.68 compared with 65.81 ± 31.31 ; $t=-2.75$, $df=298$, $p<0.01$) as well as fewer participation areas (8.71 ± 3.11 compared with 9.87 ± 3.45 ; $t=-2.66$, $df=298$, $p<0.01$). There were no significant differences in sufficiency of participation between participants with and without health limitations (0.55 ± 0.23 compared with 0.61 ± 0.24 ; $t=1.86$, $df=298$, $p=0.07$). The number of conditions was significantly negatively associated

with participation days ($r_s=-0.22$, $p<0.01$) and areas ($r_s=-0.14$, $p<0.05$) but not with sufficiency.

Physical health functioning. A summary of correlational analyses between the SF-12 domains and community participation for participants with and without serious mental illnesses can be found in Table 3. All correlations between SF-12 domains and participation days and areas were significantly stronger among participants without serious mental illnesses compared with those with serious mental illnesses, with z scores rang-

ing from 2.41 ($p<0.05$) to 3.65 ($p<0.001$; Table 3). Correlations between sufficiency of participation and SF-12 domains were not significantly different between groups.

Use of mobility aids. For participants with serious mental illnesses, there were no significant differences in participation between those using and not using mobility aids (days: 43.45 ± 34.16 compared with 51.90 ± 41.40 ; areas: 7.16 ± 3.22 compared with 7.62 ± 3.45 ; $t=0.85$, $df=296$, $p=0.39$). However, participants using mobility aids had significantly lower sufficiency scores than those who did not use a mobility aid (0.33 ± 0.25 compared with 0.43 ± 0.26 ; $t=-2.54$, $df=296$, $p<0.05$).

Within the sample of participants without serious mental illnesses, participants who used mobility aids had significantly fewer participation days (44.12 ± 35.80) than participants who did not (65.69 ± 31.13 ; $t=-4.08$, $df=298$, $p<0.001$) as well as fewer participation areas (7.21 ± 3.15 compared with 9.92 ± 3.29 ; $t=-4.98$, $df=298$, $p<0.001$). Participants without serious mental illnesses who used mobility aids also reported significantly lower sufficiency of participation (0.49 ± 0.28 compared with 0.61 ± 0.23 ; $t=-2.41$, $df=298$, $p<0.05$).

Post Hoc Analyses

Regression analyses that included covariates, such as employment, education, race, gender, and age, did not change the overall pattern of differences that were reported earlier. Our results are presented in a way to enhance clarity and parsimony.

DISCUSSION

This study is the first to examine associations between self-reported physical health and community participation among individuals with serious mental illnesses; it is also the first to compare such relationships with individuals without serious mental illnesses. In line with previous findings, participants with serious mental illnesses were more likely than participants without a diagnosed mental illness to report a physical health condition that limited their daily activities. Just as researchers have documented negative associations between physical health impairments and

TABLE 3. Correlations between SF-12 domains and community participation for participants with (group 1) and without (group 2) serious mental illnesses^a

Domain	Participation days ^b			Participation areas ^c			Sufficiency of participation ^d		
	Group 1	Group 2	z	Group 1	Group 2	z	Group 1	Group 2	z
Physical functioning	.11	.31***	-2.56*	.11	.30***	-2.43*	.20**	.15**	.63
Role functioning-physical	.11	.31***	-2.56*	.15*	.34***	-2.47*	.14*	.21***	-.88
Bodily pain	.09	.28***	-2.41*	.06	.31***	-3.17**	.28***	.14**	1.79
Physical component score	.12*	.36***	-3.12**	.10	.38***	-3.65**	.19**	.16**	.38

^a SF-12, 12-item Short-Form Health Survey.

^b N of days in the past 30 in which the participant reported participation in 22 different areas, such as going to a restaurant or a place of worship.

^c Total number of areas with at least 1 day of participation completed in the past 30 days.

^d Percentage of activity areas considered important to the participant in which he or she participated as much as desired.

* $p < .05$, ** $p < .01$, *** $p < .001$.

community participation for adults in the general population (13, 14), we expected to find similar or even stronger associations among adults with serious mental illnesses. Interestingly, participants with serious mental illnesses who reported physical health impairments that interfered with life activities did not report significantly fewer community participation days or areas than participants with serious mental illnesses without such impairments. However, they did report lower sufficiency of participation, meaning that participation was done less often than they would like. In contrast, among participants without serious mental illnesses, those who had physical health limitations reported fewer participation days and areas but not lower sufficiency of participation.

A similar pattern of findings was seen when examining associations between community participation and mobility aids. Specifically, although there were no significant differences in participation days or areas between participants with serious mental illnesses who used a mobility aid and those who did not, participants with mobility aids reported lower sufficiency of participation. Among participants without serious mental illnesses, participants who used mobility aids reported fewer participation days and areas as well as lower sufficiency. Of note, there were no significant differences in reported use of mobility aids between the samples. This result is surprising given that participants with serious mental illnesses reported more back problems as well as more bone, joint, and muscle conditions. This finding may reflect disparity in access to needed mobility aids and should be a focus of future research and service delivery.

Finally, participants with serious mental illnesses had significantly lower scores than participants without serious mental illnesses on all four SF-12 domains. Similar to the results pertaining to physical conditions and mobility aids, there were few associations between SF-12 scores and community participation days and areas, but there were significant associations between each SF-12 domain and sufficiency of participation. Specifically, participants with lower SF-12 scores reported lower sufficiency of participation.

The consistent pattern of findings across self-reported physical health conditions, use of mobility aids, and physical

health functioning suggests that although individuals with serious mental illnesses who report health limitations do not necessarily participate less frequently, or in fewer activity areas, they feel that they are not able to engage in activities as frequently as they would prefer. That is, they view their physical health as limiting their involvement, and if the conditions were not present, their community participation may likely increase. These findings are in line with research suggesting the distinction between objective functioning (in this case, number of participation days and areas reported) and subjective satisfaction with functioning (participants' reports of whether they engage in activities as often as they prefer; 24).

Given that physical health appears to be more strongly associated with community participation among participants without serious mental illnesses, particularly when examining health status with the SF-12, it appears that other factors may be more important to consider when addressing barriers to participation among individuals with serious mental illnesses. These include individual-level factors such as psychiatric symptom distress (25) and mental health functioning (20) as well as aspects of the physical and social environment, including transportation, safety, and concerns about mental health stigma (18). These factors should be the focus of future research aimed at addressing barriers to participation while also continuing to address physical health concerns that may limit active involvement.

This primarily descriptive study had several limitations. Sampling differences between participants with and without serious mental illnesses may reduce comparability of results. Participants without serious mental illnesses were drawn from a random national survey of the population that was geographically stratified, whereas participants with serious mental illnesses were not randomly selected. Generalizability concerns are also present. The participants without serious mental illnesses were older, more likely to be white, and more highly educated than members of the general population. The sample of individuals with serious mental illnesses only reflects the experiences of those receiving mental health services and may not generalize to individuals not using services. This study is correlational, and causal relationships should not be inferred. Longitudinal research

examining associations between physical health and participation over time is needed to better understand the direction of effects. Furthermore, the magnitude of many of the correlations was small, and care should be taken when interpreting findings. Finally, given that data were self-reported, actual rates of physical health limitations and community participation may be higher or lower than those reflected in our study (26). Similarly, we did not collect information about related health behaviors or conditions, such as smoking and obesity.

Despite these limitations, the findings of this study support emerging awareness of health disparities among individuals with serious mental illnesses (27) and shed light on associations between physical health limitations and community participation. Programs to improve the health of individuals with serious mental illnesses have been successful (28–30), yielding both physical and psychological benefits, including improvements in quality of life, self-efficacy, and social inclusion (31–33). However, these programs usually seek to increase moderate-vigorous physical activity, which may not sufficiently replace time spent in sedentary activity. Thus it is important to examine the role of incidental activity, which involves physical activity associated with movement required for participation (34). For example, a trip to a grocery store requires walking, reaching, and carrying items. Therefore, encouraging individuals to participate in the community provides opportunity for incidental activity and, as such, a reduction in sedentary time and physical inactivity. This focus aligns with interventions that help individuals with serious mental illnesses and chronic medical conditions manage health across multiple domains, including activity, diet, and sleep (29, 35). Such programs are a necessary component of integrated behavioral health and primary care for this population (36, 37).

CONCLUSIONS

This study found that adults with serious mental illnesses were more likely to report having a physical health condition that interfered with their life activities than adults without serious mental illnesses. For participants in both groups, physical health concerns and use of mobility aids were associated with lower reported rates of community participation. Interestingly, among participants with serious mental illnesses, those who reported physical health impairments did not report fewer participation days or areas than participants with serious mental illnesses without such impairments; however, they did report that participation was less frequent than they would like.

Further work is needed to better understand the complex relationship between physical health challenges and community participation, but results from our study suggest that it may limit individuals' ability to participate as actively as they would prefer. Because of the reciprocal benefits that participation may have for physical health and social connectedness, it is imperative to address individual, environmental,

and societal risk factors that result in higher rates of chronic illness and premature mortality among individuals with serious mental illnesses.

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