

Community Participation and Unmet Needs among People with Severe Mental Illness in Guangzhou, China

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Abstract

Purpose

Community participation is a key component of recovery and social inclusion among people with severe mental illness (SMI), yet it is often assessed using limited objective indicators. This study aimed to describe multidimensional community participation, including both objective participation and subjective needs in valued domains, and to examine their associated sociodemographic and psychosocial factors.

Methods

Baseline data from a community-based peer support intervention among people with SMI in Guangzhou, China were used. Community participation was assessed using the Temple University Community Participation (TUCP) measure adapted to the urban Chinese context. Three indicators were examined: participation days, number of activity domains, and participation insufficiency in important activity areas. Descriptive analyses and multivariable regression models were conducted.

Results

A total of 351 participants (mean [SD] age 41.5[11.5], 55.8% female) were included in the analysis. Participants reported low participation days (42.0 [19.0, 71.0]) and limited activity diversity (8.9 [5.6]) across 28 activity areas in the past 30 days, alongside substantial unmet participation needs. Activities with high importance and high insufficiency were related to social roles and social interaction. Employment and social support were associated with higher objective participation, while self-stigma and limited access to community-based services were associated with greater participation insufficiency.

Conclusion

Community participation among people with SMI is characterized not only by low levels of engagement but also by a mismatch between valued and actual participation. Interventions may need to address both structural and psychosocial barriers, including enhancing social support, reducing stigma, and improving opportunities for engagement in valued activities, to promote more meaningful and inclusive participation.

Introduction

Community participation is a central component of recovery and social inclusion for people with serious mental illness (SMI). Beyond symptom reduction, recovery-oriented mental health care emphasizes the ability to participate fully and meaningfully in society, including engaging in social roles, maintaining relationships, and participating in everyday community life [1]. A growing body of research has shown that greater participation in community life, activity engagement, and social interaction are associated with positive physical, cognitive, mental health, quality of life, and better recovery in people with SMI [2–4]. Despite these benefits, community participation has been proven to be very limited among people with SMI [5, 6]. Many individuals with SMI remain socially marginalized, experiencing persistent functional impairment, limited access to employment, social exclusion, and reduced opportunities to engage in meaningful roles in everyday life [7, 8].

Although community participation has been widely studied, most existing research has often measured community participation using relatively narrow domains (e.g., employment, social contacts, recreational activities) or has relied primarily on objective indicators such as frequency and number of activities engaged. For example, paid or voluntary work, and a broad range of social participation activities. And they have each been found to have a comparable positive association with better quality of life [4]. Although informative, these measures provide only a partial picture of participation. Moreover, these objective measures were limited in their ability to adequately capture the meaning and subjective experience of participation, including engagement in meaningful activities, capability to participate in valued activities, or perceived participation sufficient [9]. As a result, prior studies may risk underestimating the gap between desired and actual participation and be unable to fully identify unmet participation needs. From a social inclusion perspective, community participation is not just about how much individuals do, but also about their ability to participate in activities valued by themselves, their communities, and broader society, which is essential to the recovery of people with SMI [10]. Thus, a more comprehensive understanding of community participation integrating both objective quantity and subjective meaning is needed. The Temple University Community Participation measure (TUCP) offers a broader approach by assessing not only participation frequency, but also the importance and sufficiency of participation across multiple activity domains, and has been applied across diverse cultural and community settings, including studies conducted in the United States and Japan [11, 12].

These conceptual and measurement gaps are especially important in low- and middle-income countries such as China, where community mental health services have expanded substantially over the past two decades [13] and increasing numbers of people with SMI live in community settings with support from family members and community-based services [14]. However, routine mental health care continues to focus primarily on symptom management and clinical stabilization (including relapse prevention, medication adherence, and risk prevention), with less attention to social recovery and engagement in community life [15–17]. Empirical evidence on community participation among people with SMI in community settings remains limited in China, with one study reporting low levels of participation among community-dwelling adults with SMI in Beijing during COVID-19 [6]. Less is known about how participation varies across activity domains or where the most substantial gaps between importance and actual engagement occur.

Building on a previous pilot study in which limited community participation was repeatedly identified as a key challenge and intervention priority by people with SMI, family members and service providers [18], the present study aimed to assess multidimensional community participation among people with SMI

using baseline data from a community-based peer support intervention in Guangzhou, China. Specifically, our study aims to describe the levels and patterns of community participation across activity domains; identify activity areas that are both highly valued and insufficiently met; and examine sociodemographic and psychosocial factors associated with different dimensions of participation, including both objective participation (amount and diversity) and subjective participation (insufficiency in valued domains).

By providing a more comprehensive understanding of community participation in this population, this study may inform recovery-oriented community mental health services and the development of interventions that help people re-engage in community life, especially in meaningful activities and roles.

Methods

This study adopted a community-based participatory research (CBPR) approach, in which community members with lived experience of SMI, family members, and professional mental health service providers (i.e., front-line social workers, community psychiatrist), and academic researchers worked together as a CBPR team. The team guided the study across key stages of the research process, including study design, data collection, interpretation of findings, and planning for future studies, ensuring that the research was grounded in community priorities and lived experience[19, 20].

Setting and participants

This study used baseline data from an ongoing community-based peer support intervention conducted in Guangzhou, China (registration number: *ChiCTR2500095264*). 381 participants were recruited from four districts in Guangzhou, including two central urban districts and two suburban districts, between October 1, 2023, and July 1, 2025. Eligible participants were community-dwelling adults aged 18–60 years with a diagnosis of SMI according to ICD-10 diagnostic criteria, including schizophrenia, bipolar disorder, and schizoaffective disorder. Participants were required to have stable symptoms. Written informed consent was obtained from all participants prior study participation. Individuals were excluded if they were currently participating in another peer support program; had substance use problems; had severe physical illness, hearing or visual impairments, or severe cognitive impairment; had engaged in self-harm or attempted suicide within the past month and required further medical intervention; or were expected to be absent from Guangzhou for an extended period during the following 12 months. A total of 351 participants completed the baseline survey.

Procedures

Screening via phone call or face-to-face interview was conducted to ensure that the potential candidates meet eligibility based on the inclusion and exclusion criteria listed above within one week after recruitment. Eligible participants were invited to baseline survey. Trained research assistants administered all assessments through face-to-face interviews. The aim, process, survey and intervention, benefits and risks of this study were explained to all participants and their legally representative agents if there is. All surveys were conducted after providing written informed consent. Each participant received 20 RMB as compensation.

Measures

Community participation

Community participation was evaluated using the Temple University Community Participation (TUCP) scale [21]. The TUCP was translated into simplified Chinese by one research assistant, then independently back translated into English by another assistant; both were fluent in Chinese and English. The translation and back-translation process was supervised by our research team consisting of one anthropologist and two psychology professors. The draft was then circulated among CBPR team members who evaluated the accuracy and equivalence of the translation, discussing areas needing clarifications and refinement. Then, the draft was piloted with people with lived experience from our CBPR team. They gave their opinions on the comprehensibility and clarity of the translated items to help get a more cultural-appropriate and better-understanding scale for people with SMI. Based on the input, the “work for pay” item was separated into two items assessing part-time and full-time employment. The research team then reviewed the item wording and finalized the Chinese version of the TUCP, resulting in a 28-item Chinese TUCP scale.

Following the original TCUP rating approach, community participation was operationalized using three core indicators: (1) total participation days (sum of participation days across all 28 activity areas in the past 30 days), (2) number of different activities (count of activity areas with at least one day of participation), and (3) participation insufficiency in important activity areas. For the third indicator, participants first rated whether their participation in each activity area was “Enough,” “Not Enough,” or “Too Much,” and then indicated whether they considered that activity area important to them, using “Yes” or “No” response options. Participation insufficiency was calculated as the proportion of important activity areas for which participation was perceived as insufficient. Specifically, the denominator was the total number of activity areas rated as important, and the numerator was the number of those areas rated as “Not Enough”. Activity areas not endorsed as important were excluded from this indicator.

Quality of life, recovery, social support, secrecy and self-stigma

Quality of life (QoL) was assessed using the World Health Organization WHOQOL-BREF quality of life assessment. It consists of 24 items that assess four domains related to quality of life: physical health, psychological health, social relationships, and environment. It also includes two items on overall QoL and general health [22]. Participants are asked to reflect on their experiences over the past two weeks, rating items on a Likert scale based on their perceptions. The domain scores were transformed into a linear scale between 0 and 100 following the scoring guidelines, with higher scores indicating better perceived

QoL [23]. Internal consistency was acceptable across WHOQOL-BREF domains in the current sample (Cronbach's α = 0.79 for physical health, 0.78 for psychological health, 0.70 for social relationships, and 0.79 for environmental).

Recovery was assessed using the Chinese version of Recovery Assessment Scale-24 (RAS-24) [24, 25]. It consists of 24 items and has been proven to have promising psychometric properties in assessing the subjective perception of recovery. It was rated on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicated a better perception of recovery. The mean score was calculated among participants who completed 80% or above items. The RAS-24 showed excellent internal consistency in the current sample (Cronbach's α = 0.93).

Social Support was assessed using the Chinese Mandarin version of Medical Outcomes Study Social Support Survey (MOS-SSS) [26, 27]. It consists of 19 items with four sub-scales to measure the perceived adequacy of tangible support (4 items), informational and emotional support (8 items), positive social interaction (4 items) and affectionate support (3 items). A 5-point Likert scale is used with a higher score indicating better perceived support. The reliability and validity of the Chinese Mandarin scale were proved to be satisfied [26]. The mean score was calculated among participants who completed 80% or above items. The MOS-SSS showed excellent internal consistency (Cronbach's α = 0.94).

Self-stigma was measured using the 9-item Internalized Stigma of Mental Illness (ISMI-9) [28]. ISMI-9 is a self-report instrument using a four-point Likert rating scale ranges from 1 (Strongly disagree) to 4 (Strongly agree), with higher score indicating more severe internalized stigma of mental illness. The mean score was calculated among participants who answered 8 or all 9 of the ISMI-9 items. The ISMI-9 demonstrated good internal consistency (Cronbach's α = 0.82).

The 5-Item Link's Secrecy Scale, developed by Link et al [29], was used to assess an individual's tendency to conceal mental health conditions. Items were rated on a 6-point Likert scale ranging from 1 ("strongly disagree") to 6 ("strongly agree"), with higher scores indicating increased secrecy. This scale showed modest internal consistency in the current sample (Cronbach's α = 0.63)

Sociodemographic characteristics, diagnoses, and service received

Sociodemographic characteristics including age, sex, educational level, marital status (dichotomous variable coded as 1 for 'currently married' and 0 for 'not currently married' including those who are divorced, separated, widowed, or never married), employment status (1 for 'employed, full-time/ part-time' and 0 for 'not employed'), average monthly household income, living arrangement, diagnosis type and hospitalization status in the past 12 months, as well as whether participants had received community-based mental health or social support services, including visits from community mental health practitioners, social workers, or neighborhood committee staff.

Statistical methods

Descriptive analyses were used to report participant characteristics and community participation patterns. Continuous variables were reported as means and standard deviations (SD) or medians and interquartile ranges (IQR), while categorical variables were presented as frequencies and percentages. To provide supportive evidence for construct validity of selected participation indicators, we examined their correlation with quality of life, recovery, stigma, using Spearman rank correlation due to the skewed distributions of participation indicators. To examine factors associated with community participation, separate multivariable linear regression models were conducted for each of the three outcome variables: total participation days, activity diversity, participation insufficiency. Model 1 included sociodemographic and clinical variables, including center, sex, age group, marital status, education, employment status, household income, living arrangement, diagnosis, hospitalization history and community-based healthcare service use. Model 2 further adjusted for psychosocial variables, including social support, secrecy, and self-stigma. Regression coefficients (β) and 95% confidence intervals (CI) were reported. Participation amount is log-transformed due to the skewed distribution. All analyses were conducted using Stata 17.0 (StataCorp, TX, USA). A two-sided $P < 0.05$ was considered statistically significant.

Results

Characteristics of participants.

A total of 351 participants were included in our analysis. The mean age was 41.5 (SD 11.5) years, and 55.8% were female. Most participants were not currently married (74.1%), including those who were divorced, separated, widowed, or never married. And 77.2% were unemployed. Over half of the sample had completed secondary education (55.6%), and 31.6% had college-level education or above. 315 (89.7%) reported receiving community-based services. Schizophrenia was the most common primary diagnosis (54.4%), followed by bipolar disorder (26.2%) and other diagnoses (19.4%). Detailed sociodemographic and clinical characteristics are presented in Table 1.

Table 1. Characteristics of participants (N = 351)

Characteristics	Total
Sex	
Male	155 (44.2%)
Female	196 (55.8%)
Age(years), Mean (SD)	41.5 (11.5)
18-45	203 (57.8%)
45-54	93 (26.5%)
>=55	55 (15.7%)
Marital status	
Currently married	91 (25.9%)
Not currently married	260 (74.1%)
Education	
Primary and below	45 (12.8%)
Secondary	195 (55.6%)
College and above	111 (31.6%)
Employment	
Not employed	271 (77.2%)
Employed	80 (22.8%)
Average monthly household income (CNY)	
<3000	159 (45.3%)
3000-6000	97 (27.6%)
>6000	95 (27.1%)
Living alone	46 (13.1%)
Community-based service	
Yes	315 (89.7%)
No	36 (10.3%)
Diagnosis	
Schizophrenia	191 (54.4%)
Bipolar	92 (26.2%)
Other	68 (19.4%)
Hospitalizations	
None	257 (73.2%)
>=1 times	94 (26.8%)
Social support, Mean (SD)	2.9 (0.8)
Quality of life	
Physical health, Mean (SD)	58.6 (17.3)
Psychological health, Mean (SD)	51.4 (18.0)
Social relationships, Mean (SD)	54.0 (19.1)
Environment, Mean (SD)	55.9 (16.3)
Recovery, Mean (SD)	3.5 (0.6)
Self-stigma, Mean (SD)	2.2 (0.4)
Secrecy, Mean (SD)	3.5 (1.0)

Overall, participants reported relatively low levels of community participation. The median participation days across 28 activity areas in past 30 days were 42.0 (19.0, 71.0) days, and our sample participated in limited number of different activity areas in the past 30 days (mean 8.9, SD 5.6). At the same time, participants identified nearly half of the activity areas as important (mean 13.8, SD 8.2). However, among those important areas, they only participated in 6.9 (SD 5.2) areas, and 40% (SD 30%) of important areas were rated as insufficiently engaged.

Participation days, sufficiency and importance across the 28 activity areas showed substantial variability (Table 2). Abbreviated activity labels were used for presentation purposes, and full descriptions of all activity domains are provided in Supplementary Table S1. Overall, most activities were characterized by low levels of engagement, with median participation days equal to zero for most activity domains. Exceptions included routine or essential activities such as using public transportation (median = 6.0 days) and going shopping for pleasure (median = 3.0 days). Despite low participation days, a large proportion of participants rated many activities as important. For example, over 70% considered shopping for pleasure important, and more than 75% rated using public transportation as important. Similarly, social and family-related activities were frequently perceived as important (e.g. 65% perceived entertaining family in your home or visiting family in their homes important, 61.5% rated hanging out or socializing with people you know as important). However, substantial unmet needs were observed. Approximately 30–45% of participants reported that their participation was “not enough,” even when the activity was considered important.

Figure 1 shows the distribution of 28 activity domains according to perceived importance and participation insufficiency. A mismatch pattern was observed. Specifically, activities located in the upper-right quadrant—representing high importance and high insufficiency—clustered around domains related to social interaction and role functioning, including paid employment (Items 17 and 18), participating in organized events (Items 21-23), and social interaction activities (Items 24-26). In contrast, some activities with relatively high perceived importance but low insufficiency (e.g., transportation-related activities) appeared to be adequately supported, suggesting that not all valued domains represent unmet needs.

Figure 1. Distribution of activity domains by perceived importance and participation insufficiency.

Each point represents one activity domain. The x-axis shows the proportion of participants rating the activity as important, and the y-axis shows the proportion reporting insufficient participation (“not enough”). Dashed lines represent the mean proportion across all 28 activity domains. Highlighted domains indicate activities with high perceived importance and high participation insufficiency.

Table 2. overall distribution and patterns of community participation among people with SMI (N = 351)

#	Activity areas	Days, Median (Q1, Q3)	Sufficiency, n (%)			Importance, n (%)
			Enough	Not enough	Too much	
1	Shopping for pleasure	3.0 (1.0, 8.0)	222 (63.2%)	108 (30.8%)	21 (6.0%)	247 (70.4%)
2	Dining out	2.0 (0.0, 4.0)	211 (60.1%)	112 (31.9%)	28 (8.0%)	198 (56.4%)
3	Religious activities	0.0 (0.0, 0.0)	224 (63.8%)	116 (33.0%)	11 (3.1%)	127 (36.2%)
4	Movie theater	0.0 (0.0, 0.0)	199 (56.7%)	138 (39.3%)	14 (4.0%)	125 (35.6%)
5	Parks/Rec centers	2.0 (1.0, 5.0)	213 (60.7%)	110 (31.3%)	28 (8.0%)	237 (67.5%)
6	Cultural events/Arts	0.0 (0.0, 0.0)	207 (59.0%)	141 (40.2%)	3 (0.9%)	118 (33.6%)
7	Zoos/Gardens	0.0 (0.0, 0.0)	191 (54.4%)	154 (43.9%)	6 (1.7%)	130 (37.0%)
8	Libraries/Museums	0.0 (0.0, 1.0)	192 (54.7%)	150 (42.7%)	9 (2.6%)	152 (43.3%)
9	Watching sports	0.0 (0.0, 0.0)	220 (62.7%)	124 (35.3%)	7 (2.0%)	113 (32.2%)
10	Gym/Leisure exercise	0.0 (0.0, 1.0)	195 (55.6%)	148 (42.2%)	8 (2.3%)	168 (47.9%)
11	Organized sports	0.0 (0.0, 0.0)	198 (56.4%)	147 (41.9%)	6 (1.7%)	159 (45.3%)
12	Gaming outside home	0.0 (0.0, 1.0)	211 (60.1%)	131 (37.3%)	9 (2.6%)	135 (38.5%)
13	Social gaming at home	0.0 (0.0, 1.0)	220 (62.7%)	116 (33.0%)	15 (4.3%)	137 (39.0%)
14	Personal grooming/Spa	0.0 (0.0, 1.0)	240 (68.4%)	103 (29.3%)	8 (2.3%)	134 (38.2%)
15	Public transportation	6.0 (2.0, 15.0)	245 (69.8%)	81 (23.1%)	25 (7.1%)	266 (75.8%)
16	Community social groups	0.0 (0.0, 1.0)	210 (59.8%)	137 (39.0%)	4 (1.1%)	171 (48.7%)
17	Full-time employment	0.0 (0.0, 0.0)	186 (53.0%)	153 (43.6%)	12 (3.4%)	210 (59.8%)
18	Part-time employment	0.0 (0.0, 0.0)	189 (53.8%)	154 (43.9%)	8 (2.3%)	199 (56.7%)
19	Educational degree	0.0 (0.0, 0.0)	194 (55.3%)	151 (43.0%)	6 (1.7%)	160 (45.6%)
20	Personal/Leisure classes	0.0 (0.0, 0.0)	195 (55.6%)	148 (42.2%)	8 (2.3%)	168 (47.9%)
21	Volunteer activities	0.0 (0.0, 0.0)	186 (53.0%)	159 (45.3%)	6 (1.7%)	178 (50.7%)
22	Family community events	0.0 (0.0, 1.0)	197 (56.1%)	147 (41.9%)	7 (2.0%)	201 (57.3%)
23	Friends community events	0.0 (0.0, 0.0)	179 (51.0%)	168 (47.9%)	4 (1.1%)	194 (55.3%)
24	Home visits with family	0.0 (0.0, 2.0)	203 (57.8%)	140 (39.9%)	8 (2.3%)	228 (65.0%)
25	Home visits with friends	0.0 (0.0, 1.0)	185 (52.7%)	156 (44.4%)	10 (2.8%)	205 (58.4%)
26	Socializing/Hang out	0.0 (0.0, 2.0)	195 (55.6%)	147 (41.9%)	9 (2.6%)	216 (61.5%)
27	Community fairs/Events	0.0 (0.0, 0.0)	205 (58.4%)	142 (40.5%)	4 (1.1%)	152 (43.3%)
28	Civic/Political activities	0.0 (0.0, 0.0)	214 (61.0%)	129 (36.8%)	8 (2.3%)	127 (36.2%)

Bolded activity areas correspond to the highlighted domains in Figure 1, indicating activities with relatively high perceived importance and high participation insufficiency.

Correlations with related constructs

To provide supportive evidence for the construct validity of the participation indicators, correlations between participation measures and related constructs, including quality of life, recovery, social support, and self-stigma, were examined. Participation amount and number of activity domains were positively associated with four domains of QoL, recovery, and social support, and negatively correlated with self-stigma. Perceived insufficiency in important areas was negatively correlated with QoL in psychological health, social relationships, and environment and positively correlated with self-stigma. No significant correlation between perceived insufficiency and recovery was observed (Table S2).

Factors associated with community participation

Results from multivariable regression analyses are presented in Table 3. Model 1 included sociodemographic and clinical variables, while Model 2 additionally adjusted for psychosocial factors including social support, self-stigma, and secrecy level.

Employment was strongly associated with higher total participation days. In Model 1, employed participants had significantly higher participation levels ($\beta = 0.56$, 95% CI: 0.29–0.82, $P < 0.001$), and this association remained significant in Model 2 after adjustment for psychosocial factors ($\beta = 0.47$, 95% CI: 0.21–0.73, $P = 0.001$). Social support was also positively associated with participation ($\beta = 0.25$, 95% CI: 0.10–0.40, $P = 0.001$).

For the number of different activities, employment showed a positive association in Model 1 ($\beta = 1.56$, $P = 0.036$), although this association was no longer statistically significant in Model 2. Social support was significantly associated with participation diversity ($\beta = 1.73$, 95% CI: 0.91–2.55, $P < 0.001$). No significant associations were observed for self-stigma, secrecy, or most demographic characteristics.

Participation insufficiency in important activity areas showed a distinct pattern of associations. Employment and social support were not significantly associated with participation insufficiency. Older age (≥ 55 years) was associated with lower levels of insufficiency ($\beta = -0.14$, 95% CI: -0.25 to -0.02, $P = 0.019$). Participants who did not receive community-based services reported higher levels of participation insufficiency ($\beta = 0.13$, 95% CI: 0.00–0.25, $P = 0.042$). Compared with participants with schizophrenia, participants with other SMI showed lower insufficiency ($\beta = -0.11$, 95% CI: -0.22 to -0.01, $P = 0.026$). Self-stigma was significantly associated with higher perceived insufficiency ($\beta = 0.12$, 95% CI: 0.03–0.21, $P = 0.012$), suggesting that individuals experiencing greater internalized stigma had more unmet participation needs in important activities.

Table 3. Factors associated with objective and subjective community participation

	Total participation days				Number of activities				Insufficiency
	Model 1		Model 2		Model 1		Model 2		Model 1
	$\beta(95\%CI)$	<i>P</i>	$\beta(95\%CI)$	<i>P</i>	$\beta(95\%CI)$	<i>P</i>	$\beta(95\%CI)$	<i>P</i>	$\beta(95\%CI)$
Center(ref=1)									
2.center	0.06 (-0.24, 0.36)	0.702	0.01 (-0.29, 0.30)	0.967	-0.70 (-2.32, 0.92)	0.396	-1.15 (-2.77, 0.47)	0.162	0.09 (-0.01, 0.19)
3.center	-0.22 (-0.50, 0.05)	0.112	-0.24 (-0.52, 0.03)	0.079	-0.85 (-2.34, 0.65)	0.267	-1.28 (-2.77, 0.21)	0.091	-0.01 (-0.10, 0.08)
4.center	-0.27 (-0.70, 0.16)	0.219	-0.36 (-0.77, 0.06)	0.094	-0.51 (-2.85, 1.83)	0.668	-1.12 (-3.40, 1.16)	0.336	0.10 (-0.04, 0.24)
Sex(ref=male)									
female	0.14 (-0.08, 0.37)	0.203	0.17 (-0.05, 0.38)	0.136	1.21 (0.00, 2.42)	0.050	1.16 (-0.03, 2.36)	0.056	0.02 (-0.05, 0.09)
Age group (ref= <45)									
45-55	0.01 (-0.26, 0.28)	0.952	0.03 (-0.24, 0.30)	0.828	-1.14 (-2.63, 0.35)	0.134	-0.95 (-2.42, 0.52)	0.205	-0.06 (-0.15, 0.03)
>55	0.02 (-0.32, 0.36)	0.913	0.05 (-0.29, 0.38)	0.786	-1.26 (-3.11, 0.58)	0.178	-1.08 (-2.90, 0.74)	0.246	-0.15 (-0.26, -0.04)
Marital status (ref= Currently married)									
Not currently married	0.05 (-0.21, 0.32)	0.698	0.10 (-0.16, 0.37)	0.430	0.38 (-1.07, 1.83)	0.610	0.72 (-0.71, 2.15)	0.321	0.04 (-0.04, 0.12)
Education (ref= Primary and below)									
Secondary	0.02 (-0.33, 0.37)	0.913	0.01 (-0.33, 0.35)	0.940	-0.42 (-2.34, 1.49)	0.664	-0.71 (-2.57, 1.15)	0.453	-0.12 (-0.23, -0.01)
College and above	0.24 (-0.15, 0.63)	0.224	0.15 (-0.24, 0.53)	0.448	0.67 (-1.46, 2.81)	0.537	0.24 (-1.87, 2.34)	0.823	-0.08 (-0.21, 0.05)
Employment (ref= unemployed)									
Employed	0.56 (0.29, 0.82)	<0.01	0.47 (0.21, 0.73)	0.001	1.56 (0.11, 3.02)	0.036	1.01 (-0.42, 2.44)	0.165	-0.07 (-0.15, 0.01)
Income (ref= <3000)									
3000-6000	0.11 (-0.16, 0.38)	0.419	0.03 (-0.23, 0.29)	0.810	0.60 (-0.86, 2.06)	0.421	0.46 (-0.97, 1.89)	0.531	0.00 (-0.08, 0.08)
>6000	-0.17 (-0.43, 0.10)	0.222	-0.21 (-0.48, 0.05)	0.114	-0.76 (-2.22, 0.71)	0.310	-0.84 (-2.28, 0.60)	0.253	-0.02 (-0.11, 0.07)
Living alone (ref= no)									
yes	0.06 (-0.29, 0.40)	0.751	0.14 (-0.21, 0.48)	0.445	0.98 (-0.90, 2.85)	0.306	1.33 (-0.57, 3.23)	0.170	0.05 (-0.06, 0.16)
Community-based mental health service (ref=yes)									
None	-0.25 (-0.61, 0.11)	0.178	-0.31 (-0.66, 0.05)	0.090	-0.85 (-2.82, 1.12)	0.397	-1.50 (-3.43, 0.44)	0.129	0.10 (-0.02, 0.22)
Diagnosis (ref= Schizophrenia)									
Bipolar	0.06 (-0.21, 0.32)	0.679	0.04 (-0.23, 0.30)	0.786	-0.07 (-1.53, 1.39)	0.927	-0.36 (-1.80, 1.08)	0.624	-0.09 (-0.18, 0.01)
Others	-0.01 (-0.30, 0.28)	0.946	0.03 (-0.26, 0.32)	0.843	0.14 (-1.46, 1.74)	0.867	0.16 (-1.44, 1.76)	0.844	-0.11 (-0.20, -0.02)

	Total participation days				Number of activities				Insufficienci
	Model 1		Model 2		Model 1		Model 2		Model 1
	$\beta(95\%CI)$	<i>P</i>	$\beta(95\%CI)$	<i>P</i>	$\beta(95\%CI)$	<i>P</i>	$\beta(95\%CI)$	<i>P</i>	$\beta(95\%CI)$
					1.73)				
Hospitalization (ref= None)									
>=1 times	0.17 (-0.08, 0.41)	0.179	0.24 (0.00, 0.49)	0.050	0.42 (-0.92, 1.75)	0.540	0.68 (-0.65, 2.02)	0.314	0.03 (-0.05,
Social support			0.25 (0.10, 0.40)	0.001			1.73 (0.91, 2.55)	<0.01	
Secrecy			0.07 (-0.04, 0.18)	0.232			0.21 (-0.41, 0.84)	0.504	
Self-stigma			-0.21 (-0.48, 0.05)	0.109			-0.28 (-1.72, 1.16)	0.702	

Discussion

This study provides a comprehensive understanding of community participation levels, patterns, and associated factors among people with SMI in a community setting. Total participation days and the number of different activities reflected the objective participation, while participation insufficiency captured the unmet participation needs in valued domains. We found that participation was limited in overall quantity and unevenly distributed across activity domains. Moreover, the findings identified a systematic mismatch between perceived importance and participation insufficiency, with high unmet needs concentrated in activities related to social roles and community integration, such as work for pay and social interaction. Employment and social support were associated with objective participation amount and activity diversity, whereas diagnosis and self-stigma were associated with participation insufficiency in important areas.

Our findings extend existing research by framing community participation through the lens of social inclusion, defined as the ability to participate in activities valued within one's community or wider society as one would wish. From this perspective, participation insufficiency in important activities reflects a gap between desired and actual engagement, capturing unmet needs in socially valued roles. This interpretation is further supported by the capability approach, which emphasizes individuals' real opportunities to pursue valued ways of living, rather than focusing only on observed outcomes [30]. Together, these perspectives suggest that participation insufficiency cannot be adequately captured by activity frequency or diversity alone, but should be understood as a gap between valued participation and the real opportunities available to achieve it. In this study, such unmet participation needs were especially evident in domains related to social roles and community integration.

Studies using the TUCP measure across countries have similarly reported limited community participation among people with SMI in US and Japan, particularly in activities related to employment and social interaction [11, 31]. The low participation level and high insufficiency pattern in valued social interaction areas might reflect not only illness-related impairments in social functioning, but also broader structural barriers including social and economic pressures, limited opportunities in the labor market, and psychosocial barriers that constrain engagement in community life.

Compared with a previous study conducted in China, our sample showed lower levels of objective participation and higher levels of perceived insufficiency [6]. For example, in the activity of work for pay, the Beijing sample reported more days and lower perceived insufficiency than the Guangdong sample (23.4% vs. 43.6%). These differences may be partly explained by variations in sample characteristics, including employment, marital status, levels of support, differences in illness severity, as well as variation in the availability of community resources and social support systems across cities. However, direct comparison remains limited due to scarcity of studies using comprehensive measures of community participation and differences in measurement tools (the Beijing study use 20-item CPDM adapted from TUCP).

Correlation analysis supported the construct validity of these participation indicators. Results suggested that objective participation and subjective insufficiency were related to recovery and quality of life. The associations with activity diversity and perceived insufficiency suggest that participation should not be understood only in terms of amount. Efforts and programming to support community participation should additionally take a person-centered approach by considering the breadth of activity engagement and the extent to whether participation aligns with individuals' values, goals, and preference.

We further investigated factors associated with participation. Our findings suggested distinct correlates of objective participation and participation insufficiency, further supporting the need to consider both behavioral engagement and subjective adequacy when understanding community participation among people with SMI. Consistent with previous studies, employment and social support were associated with more total participation days and activity diversity [6]. Employment helps people with SMI realizing a key social role in community life and facilitates broader community participation not only through financial means, but also by expanding their social networks, increasing access to informational and instrumental support, and creating opportunities for engagement [7, 32, 33]. The association between employment and activity diversity was attenuated after adjusting social support, suggesting employment might enhance activity diversity via increasing social support [34]. This finding strengthens the central role of work and social support in engagement in community life.

In contrast, employment and social support were not significantly associated with participation insufficiency in valued areas, while self-stigma was associated with greater unmet participation needs. The unmet participation needs may reflect not only the availability of external opportunities, but also stigma-related psychological barriers. Internalized stigma may limit engagement in valued activities by shaping how people with SMI perceive themselves, lower self-efficacy and expectations for participation, anticipate rejection, and self-select out of valued social activities even when opportunities are available [35, 36]. Interventions promoting social participation should incorporate anti-stigma component. Participants with other SMI diagnoses reported lower

participation insufficiency than those with schizophrenia. This pattern may reflect the greater burden of negative symptoms, cognitive impairment, and social functional difficulties commonly observed in schizophrenia, which may make it harder for them to engage in valued activities [37]. People with schizophrenia may need more individualized and sustained support to adequately participate in valued activities. Moreover, the use of community-based service is associated with lower participation insufficiency in important areas, suggesting that community mental health practitioner/social worker visits might facilitate access to valued activities and enhance satisfaction with community life.

This study extends prior research by examining both objective participation and subjective insufficiency among people with SMI. However, several limitations should be considered when interpreting the findings of the study. First, the cross-sectional design precludes causal inference. We were not sure about the causal relationship between social support, stigma and community participation. Second, participants were recruited through multiple community-based channels rather than probability sampling, including referrals from community mental health practitioners, social workers, community organizations, and community outreach. As a result, the sample may not fully represent the broader population of people with SMI living in the community, particularly individuals with more severe symptoms or functional impairments, potentially leading to an overestimation of community participation levels. Third, participation measures relied on self-report and may be subject to recall or reporting bias. Fourth, the study was conducted in Guangzhou, a relatively resource-rich urban setting with more accessibility of opportunities for participation, which may limit generalizability to rural or less-resourced areas. Future research using longitudinal design and recruiting more diverse samples, particularly from resource-constrained and non-urban settings are needed.

Conclusion

Community participation among people with SMI is characterized by substantial heterogeneity and a notable mismatch between valued and achieved activities. Objective and subjective factors are associated with distinct determinants. These findings have important implications for mental health services and interventions. Enhancing community participation among people with SMI requires not only increasing overall engagement such as participation days and activity diversity but also addressing unmet needs in valued activity domains. Therefore, interventions may need to address both structural and psychosocial barriers to community participation, including supporting participation in socially meaningful roles and community integration, increasing access to community-based service, strengthening social support, and reducing stigma, to promote more meaningful and inclusive participation.

Declarations

Ethics approval and patient consent

All procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008. All procedures were approved by the Ethics Committees in the University of Chicago [IRB22-1578] and the Affiliated Brain Hospital of Guangzhou Medial University [2023-077]. Researchers have explained the aim, potential risks, and benefits of this study to each participant and written informed consent were obtained from all participants before conducting any interviews.

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Conflicts of interests

None.

Data sharing

Individual participant data that underline the results reported in this article, after de-identification will be available from the corresponding author upon reasonable request, following completion of the effectiveness evaluation of the intervention.

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Authorship

Concept and design: JW. Data collection: XC. Statistical analysis and interpretation of data: JW. Drafting of the manuscript: JW and SQ. Obtained funding: ZM. Critical revision of the manuscript for important intellectual content: JW, SQ and ZM. Administrative, technical, or material support: All authors.

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Figures

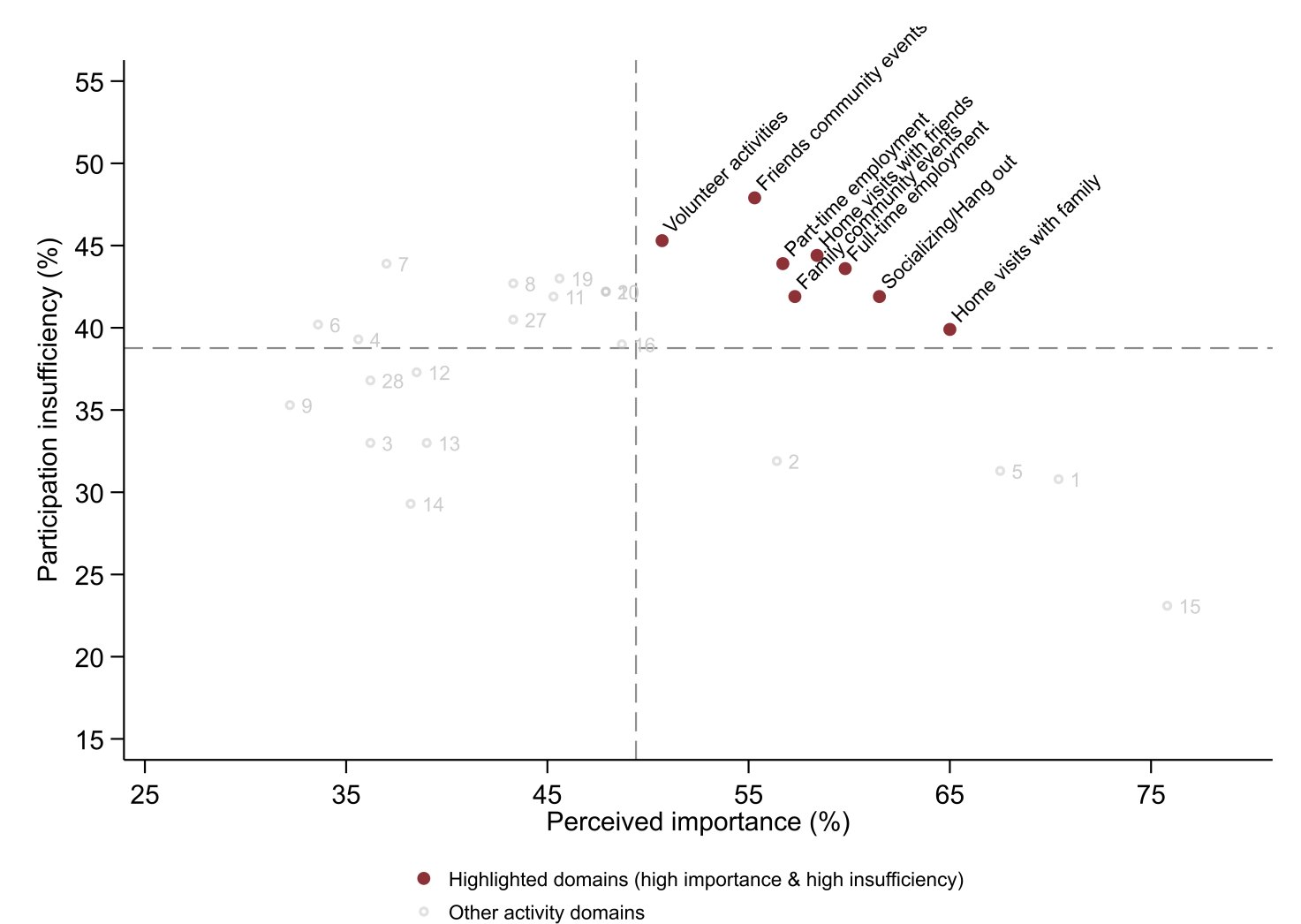


Figure 1

Distribution of activity domains by perceived importance and participation insufficiency.

Each point represents one activity domain. The x-axis shows the proportion of participants rating the activity as important, and the y-axis shows the proportion reporting insufficient participation ("not enough"). Dashed lines represent the mean proportion across all 28 activity domains. Highlighted domains indicate activities with high perceived importance and high participation insufficiency.

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