Psychiatric Quarterly (2019) 90:613–627
https://doi.org/10.1007/s11126-019-09652-1

ORIGINAL PAPER

Profiles of Service Users with Severe Mental Disorders Based on Adequacy of Help

Marie-Josée Fleury[1,2] · Guy Grenier[1] · Jean-Marie Bamvita[1]

Published online: 19 June 2019

Abstract

This study has for aims to develop a typology describing adequacy of help based on socio-demographic, clinical and service utilization variables for 204 service users with severe mental disorders treated in the community. Study participants were recruited in an urban area of Quebec (Canada). Adequacy of help was assessed with the Montreal Assessment of Needs Questionnaire. A cluster analysis identified five profiles of service users. Adequacy of help was mainly related to continuity of care, help given by services, seriousness of needs and, to some extent, quality of life (QOL). Adequacy of help was highest among Class 3 participants, described as older individuals with mood disorders, who lived in autonomous housing and enjoyed good QOL. They received substantial help from both relatives and services. Adequacy of help was lowest for Class 5, which included individuals affected by co-occurring mental disorders but who also lived autonomously. Health service utilization was more strongly related to adequacy of help for this sample than were the socio-demographic and clinical factors tested.

Keywords Typology · Adequacy of help received · Clusters · Service users · Severe mental disorders

✉ Marie-Josée Fleury
flemar@douglas.mcgill.ca

Guy Grenier
guy.grenier@douglas.mcgill.ca

Jean-Marie Bamvita
jean-marie.bamvita@douglas.mcgill.ca

[1] Research center, Douglas Mental Health University Institute, 6875 LaSalle Blvd., Montreal, Quebec H4H 1R3, Canada

[2] Department of Psychiatry, McGill University, 33 Pine Avenue West, Montreal, Quebec H31 1A1, Canada

Introduction

Service users with severe mental disorders (SMDs) experience various needs, such basic subsistence needs or health and social services needs [1]. While some needs are amenable to short-term professional intervention, others require longer, and more continuous, care aimed at avoiding hospitalization [1]. In this context, competent needs assessment is essential in planning and delivering services [2]. The provision of appropriate help from mental health services, in terms of both quantity and quality, and help that addresses the seriousness of needs among service users is an increasingly crucial issue, especially in view of the increasing numbers of service users with SMDs living, and accessing services, in communities [2, 3]. When service users with SMDs view the help they receive as adequate, they tend to fare better in terms of social integration, quality of life (QOL), and personal recovery [4].

Needs assessments have focused on service users with SMDs in general [5], needs associated with specific types of SMDs [6–9], comparative perspectives of patients and professionals on needs [10–12], and changing needs over time [13–17]. Several studies found negative associations between serious (i.e. unmet) needs and QOL [10, 16, 18–23], and between the seriousness of needs and service user satisfaction [24, 25]. Higher numbers of needs were associated with male gender, unemployment, greater disability, lower functioning and higher service utilization [26]. Moreover, adequacy of help was also related to male gender, [27], older age [4], having fewer needs [4, 27], less serious needs [8, 27], as well as help received from services [4, 27] and access to a regular caregiver [4].

Service users with SMDs are not a homogenous population [28]. Socio-demographics (e.g. age, gender), clinical characteristics (e.g. type and number of diagnoses) and services utilization variables (e.g. number of professional consulted, continuity of care) interact to influence individual outcomes such as adequacy of help. Cluster analysis, is a reliable method for identifying typologies of service users with SMDs based on multiple variables [29]. Profiles have been identified through cluster analysis for co-occurring SMD and substance abuse disorders [30–32]; chronic SMD [28]; first-time hospital inpatients [33]; first-episode psychosis patients [34–36]; frequent inpatient mental health service use [37, 38]; and patient populations with schizophrenia receiving community-based services [39, 40]. While assessments usually include socio-demographics (e.g. age, gender, education), clinical variables (e.g. diagnosis, community functioning), and service utilization (e.g. continuity of care, number of professionals consulted), the adequacy of help received by service users has rarely been considered, except in studies involving hospital admissions or community service utilization [39].

Other studies have created typologies based mainly on service utilization variables [41–43]. Clinical variables were understudied in such cases, and samples tended to include service users with common mental disorders. For instance, Bridges et al. [41] identified three classes ("well-served", "undeserved", and "subclinical") in terms of perceived needs, service use and related barriers for a sample with depressive or anxiety disorders receiving integrated care. Differences emerged in terms of age (an older underserved group), primary language (more Spanish speakers in the subclinical group), insurance status (more uninsured participants in the undeserved group) and overall functioning (lower in the well-served group) [41].

Few studies have tested socio-demographic and clinical variables, or service utilization variables among service users with different types of SMDs. Moreover, few studies have produced typologies for adequacy of help among individuals with SMDs [44]. Using cluster analysis, and drawing on socio-demographic, clinical and service utilization variables, the

present study seeks to develop a typology for adequacy of help based on the perceptions of 204 individuals diagnosed with SMDs and living in local, Quebec (Canada) communities.

Methods

Recruitment and Data Collection

This research stemmed from the third phase of a longitudinal study which assessed needs of users with SMDs [21]. Recruitment was conducted at a major mental health institute, and two community service centers in southwest Montreal (Quebec, Canada). Recruitment strategies included information sessions on the project for service providers, and posters displayed in outpatient clinics. Participants were between 18 and 70 years of age, with a diagnosed SMD based on to the DSM-IV. Participants had to authorize access to their medical records at the mental health institute for purposes of the study. Anyone unable to withstand the interview process due to clinical status or presence of a severe intellectual deficit, those under involuntary psychiatric treatment or hospitalized during the study were excluded. Two interviews (duration: 90 min each) were conducted with each participant at a 1-week interval. Data for T0 were collected from December 2008 to September 2010, and for T1 from January to November 2011. Data collection at T2 took place over ten months (June, 2013 – April, 2014). The research ethics boards of the mental health institute, and the two community service centers, provided ethics approval.

Variables and Instruments

Data sources included four instruments, including English and French versions, and participant medical records. Adequacy of help was assessed based on the Montreal Assessment of Needs Questionnaire (MANQ) [45], which measures needs in 26 domains over a 12-month period using an 11-point analog scale (range: 0–10). Questions for each identified area of need included: 1) seriousness, 2) help given by relatives or by services; 3) support from services (not assessed in this study), and 4) adequacy of help, from both quantitative (i.e. right amount of help) and qualitative (i.e. right type of help) perspectives.

The variable of interest "adequacy of help" was constructed by summing responses in terms of quality and quantity (total: 0–20), and dividing this total by the number of needs reported. When scores for adequacy of help given by services were at least two times greater than scores for seriousness of needs, adequacy of help was rated as fully met.

Other standardized instruments measured: QOL (Satisfaction with Life Domains Scale: SLDS), [46]; continuity of care (Alberta Continuity of Services Scale for Mental Health: ACSS-MH) [47], and mental health professionals consulted (e.g. family physician, nurse, psychologist) over a 12-month period (Service Utilization Questionnaire: SUQ), derived from the Canadian Community Health Survey [48]. Table 1 provides detailed information on these instruments. Study participants completed their questionnaires with assistance from trained research agents. Information on socio-demographic variables collected in the first part of the MANQ questionnaire, and data on diagnoses drawn from patient clinical records.

Analysis

Univariate analyses, including frequency distributions for categorical variables, and central tendency distributions (means and standard deviations) for continuous variables, were

Table 1 Instruments

	Name	Psychometrics
1	Montreal Assessment of Needs questionnaire (MANQ)	Explores 26 domains of need, amount of help received from services and relatives, adequacy of help received from services; 11- point scale. CA: 0.70–0.73 [45] (Rating: 0–10; Needs: higher = higher seriousness needs; Amount of help received: lower = less help received) (Rating: 0–20: Adequacy of help received from services: (0–10: quantity (right amount of help); 0–10: quality (right type of help) lower = lower adequacy)
2	Satisfaction with Life Domains Scale (SLDS)	Assesses quality of life. CA = 0.92 [46] (Rating: 20–140; lower = poorer quality of life)
3	Alberta Continuity of Services Scale for Mental Health (ACSS-MH)	Measures service continuity. CA = 0.78 to 0.92 [47] (Rating: 0–215; lower = lower continuity of services)
4	Service Use Questionnaire (SUQ)	Based on the Canadian Community Health Survey (CCHS) 1.2 [48]. Survey questionnaire for socio-demographic characteristics; Yes/No and multiple choice questions; Likert and non-Likert scale questions

With the exception of the MANQ, total scores were used even though numerous sub-scales were avaluable for some instruments

performed on participant characteristics. A two-step cluster analysis identified participant typologies. Selected variables were classified as categorical or continuous. Categorical variables included age, gender, level of education, source of income, type of housing, mood disorders, schizophrenia, anxiety disorders, personality disorders, alcohol dependence, and drug dependence. Continuous variables included QOL, number and seriousness of needs, number of MDs (excluding alcohol dependence, and drug dependence), help given by services, help given by relatives, number of professionals consulted, and continuity of care. Categorical variables were first entered into the model, then the continuous variables. Log-likelihood methods determined between-subject distances and specific participant classifications. Using the Schwarz Bayesian criterion, an initial model was produced, yielding two classes. A number of additional models were generated, with different numbers of classes. The final model included five classes, based on the overall contributions of each to inter-class homogeneity and using the model improvement test diagnostic.

Results

Of 437 individuals solicited at T0, 352 (80.5%) agreed to participate for a 80.5% response rate. Among those 352 participants, 297 (84.4%) were interviewed at T1 [22]. Finally, 207 were interviewed at T2 for a 70% response rate. Three participants were later excluded due to missing data (more than 5%). No differences were found concerning gender and education between the T0 and T2 samples (gender: $X^2 = 0.001$, $P = 0.982$; education: $X^2 = 0.606$, $P = 0.436$), nor between the T1 and T2 samples (gender: $X^2 = 0.099$, $P = 0.754$; education: $X^2 = 0.942$, $P = 0.344$).

Table 2 presents descriptive statistics for the 204 participants; a small majority were men (53% vs 47%), and average age was 51 years. Forty-two percent lived on welfare, and most

Table 2 Participant characteristics ($N = 204$)

Variables			Min	Max	n/Mean	%/SD
Variable of interest	Adequacy of help received[a] (n, %)	Not fully met			180	88.2
		Fully met			24	11.8
Socio-demographic	Age (Mean, SD)		24.00	69.00	51.21	9.90
	Age categories (n,%)	<40 years.			30	14.7
		40–54 years			91	44.6
		55 years and over			83	40.7
	Gender (n,%)	Male			108	52.9
		Female			96	47.1
	Sources of income (n,%)	Welfare			86	42.2
		Other			118	57.8
	Level of education (n,%)	Primary/Secondary			126	61.8
		College/University			78	38.2
	Housing (n,%)	Spervised			102	50.0
		Autonomous			102	50.0
	Quality of life: SLSD score (Mean, SD)		38.00	139.00	99.09	18.32
Clinical	Number of needs (Mean, SD)		0.00	21.00	7.25	4.38
	Seriousness of needs (Mean[a], SD)		0.00	10.00	4.68	2.11
	Number of MDs[b] (Mean, SD)		0.00	5.00	1.64	0.85
	Mood disorders (n, %)				82	40.2
	Schizophrenia (n, %)				63	30.9
	Personality disorders (n, %)				45	22.1
	Anxiety disorders (n, %)				41	20.1
	Moderate or mild intellectual deficit (n, %)				30	14.7
	Schizophrenia spectrum disorders (n, %)				23	11.3
	Drug dependence (n, %)				22	10.8
	Alcohol dependence (n,%)				19	9.3
	Attention deficit hyperactivity disorder (n, %)				6	2.9
	Delusion and other psychotic disorders (n, %)				4	2.0
	Adjustment disorders (n, %)				4	2.0
Services	Adequacy of help received (Mean[a], SD)		1.00	20.00	10.09	5.51
	Help given by relatives (Mean[a], SD)		0.00	10.00	3.47	3.14
	Help given services (Mean[a], SD)		0.00	10.00	3.91	2.74
	Number of health professionals consulted (Mean, SD)		0.00	5.00	2.98	1.07
	Continuity of care (Mean, SD)		67.00	176.00	134.26	16.16

[a] Global score divided by number of needs

[b] Mental disorders (MD), excluding alcohol dependence and drug dependence

had a secondary school education or less. Prevalent MDs included: mood disorders (40%), schizophrenia (31%), personality disorders (22%), and anxiety disorders (20%).

The cluster analysis produced a five-class model (Table 3). Class 1 consisted mainly of male participants, with low level of education; they were mainly welfare recipients, and residents in supervised housing. Class 1 participants were almost all affected by schizophrenia, and none with mood disorders. They had the second best score in terms of help given by services but the lowest score on help given by relatives. They ranked second on number of professionals consulted, and continuity of care; their scores on adequacy of help

Table 3 Cluster analysis for adequacy of help among participants with severe mental disorders ($N = 204$)

Variables			Class 1 ($n = 58$; 28.4%) N/Mean %/SD	Class 2 ($n = 38$; 18.6%) N/Mean %/SD	Class 3 ($n = 24$; 11.8%) N/Mean %/SD	Class 4 ($n = 39$; 19.1%) N/Mean %/SD	Class 5 ($n = 45$; 22.1%) N/Mean %/SD	Combined (n = 204,100.%) N/Mean %/SD
Variable of interest	Adequacy of help (n. %)	Not fully met	58	38	0	39	45	180
			32.2%	21.1%	0.0%	21.7%	25.0%	100.0%
		Fully Met	0	0	24	0	0	24
			0.0%	0.0%	100.0%	0.0%	0.0%	100.0%
Socio-demographic	Age categories (n. %)	<40 years	14	5	3	4	4	30
			46.7%	16.7%	10.0%	13.3%	13.3%	100.0%
		40–54 years	19	31	7	7	27	91
			20.9%	34.1%	7.7%	7.7%	29.7%	100.0%
		55 years and over	25	2	14	28	14	83
			30.1%	2.4%	16.9%	33.7%	16.9%	100.0%
	Gender (n. %)	Male	47	19	10	12	20	108
			43.5%	17.6%	9.3%	11.1%	18.5%	100.0%
		Female	11	19	14	27	25	96
			11.5%	19.8%	14.6%	28.1%	26.0%	100.0%
	Sources of income (n. %)	Welfare	34	19	9	9	15	86
			39.5%	22.1%	10.5%	10.5%	17.4%	100.0%
		Other	24	19	15	30	30	118
			20.3%	16.1%	12.7%	25.4%	25.4%	100.0%
	Level of education (n. %)	Primary/Secondary	46	22	13	21	24	126
			36.5%	17.5%	10.3%	16.7%	19.0%	100.0%
		College/University	12	16	11	18	21	78
			15.4%	20.5%	14.1%	23.1%	26.9%	100.0%
	Housing (n. %)	Autonomous	12	15	15	21	39	102
			11.8%	14.7%	14.7%	20.6%	38.2%	100.0%
		Supervised	46	23	9	18	6	102
			45.1%	22.5%	8.8%	17.6%	5.9%	100.0%
	Quality of life (Mean. SD)		101.78	101.40	105.13	101.95	87.98	99.09
			16.00	15.69	19.95	16.91	19.69	18.32
Clinical	Number of needs (Mean. SD)		7.60	7.11	0.67	6.97	10.67	7.25

Table 3 (continued)

Variables			Class 1 ($n = 58$; 28.4%) N/Mean %/SD	Class 2 ($n = 38$; 18.6%) N/Mean %/SD	Class 3 ($n = 24$; 11.8%) N/Mean %/SD	Class 4 ($n = 39$; 19.1%) N/Mean %/SD	Class 5 ($n = 45$; 22.1%) N/Mean %/SD	Combined (n = 204,100.%) N/Mean %/SD
			3.99	3.45	0.70	2.95	3.78	4.38
	Seriousness of needs (Mean. SD)		4.97	5.11	0.86	4.57	6.08	4.68
			1.53	1.51	0.89	1.87	1.35	2.11
	Number of mental disorders (MD)		1.67	1.53	1.50	1.18	2.18	1.64
	(Mean. SD)		0.85	0.92	0.72	0.51	0.83	0.85
	Schizophrenia (n.	Yes	56	2	5	0	0	63
	%)		88.9%	3.2%	7.9%	0.0%	0.0%	100.0%
		No	2	36	19	39	45	141
			1.4%	25.5%	13.5%	27.7%	31.9%	100.0%
	Personality	Yes	8	8	3	3	23	45
	disorders (n.		17.8%	17.8%	6.7%	6.7%	51.1%	100.0%
	%)	No	50	30	21	36	22	159
			31.4%	18.9%	13.2%	22.6%	13.8%	100.0%
	Alcohol	Yes	3	9	4	1	2	19
	dependence		15.8%	47.4%	21.1%	5.3%	10.5%	100.0%
	(n. %)	No	55	29	20	38	43	185
			29.7%	15.7%	10.8%	20.5%	23.2%	100.0%
	Drug dependence	Yes	4	8	5	0	5	22
	(n. %)		18.2%	36.4%	22.7%	0.0%	22.7%	100.0%
		No	54	30	19	39	40	182
			29.7%	16.5%	10.4%	21.4%	22.0%	100.0%
	Anxiety disorders	Yes	9	7	3	0	22	41
	(n. %)		22.0%	17.1%	7.3%	0.0%	53.7%	100.0%
		No	49	31	21	39	23	163
			30.1%	19.0%	12.9%	23.9%	14.1%	100.0%
	Mood disorders	Yes	0	0	14	34	34	82
	(n. %)		0.0%	0.0%	17.1%	41.5%	41.5%	100.0%
		No	58	38	10	5	11	122
			47.5%	31.1%	8.2%	4.1%	9.0%	100.0%
Services	Adequacy of help received (Mean. SD)		10.24	10.79	18.00	8.24	6.70	10.09

Table 3 (continued)

Variables		Class 1 ($n = 58$; 28.4%) N/Mean %/SD	Class 2 ($n = 38$; 18.6%) N/Mean %/SD	Class 3 ($n = 24$; 11.8%) N/Mean %/SD	Class 4 ($n = 39$; 19.1%) N/Mean %/SD	Class 5 ($n = 45$; 22.1%) N/Mean %/SD	Combined (n = 204,100.%) N/Mean %/SD
		5.00	4.94	0.00	5.39	3.57	5.51
	Help given by relatives (Mean. SD)	2.23	2.90	9.29	3.31	2.61	3.47
		2.30	2.53	0.46	2.58	2.44	3.14
	Help given by services (Mean. SD)	3.98	3.98	9.08	2.21	2.46	3.91
		2.20	2.25	0.28	1.58	1.60	2.74
	Number of professionals consulted (Mean. SD)	3.05	2.89	2.46	2.69	3.47	2.98
		1.00	0.89	0.98	1.00	1.20	1.07
	Continuity of care (Mean. SD)	137.14	139.32	135.11	132.09	127.69	134.26
		14.02	13.89	18.56	12.89	19.58	16.16
Labels		Poor men with schizophrenia, and low educational levels, residing in supervised housing, with low levels of help given by relatives but high levels of help given by services, high continuity of care and high adequacy of help	Middle-aged individuals living in supervised housing with serious needs, but with high levels of help given by services, continuity of care and adequacy of help	Older individuals with mood disorders, living in autonomous housing and receiving high levels of help given by services and relatives, with high quality of life, and adequacy of help fully met	Older women with mood disorders, and low scores on help given by services, continuity of care and adequacy of help	Individuals living in autonomous housing with multiple MDs, many and more serious needs, low quality of life, and low levels of help given by services and by relatives, continuity of care and adequacy of help	

were greater than average. Class 1 was labeled "Poor men with schizophrenia and low education levels, residing in supervised housing, with low levels of help given by relatives but high levels of help given by services, high continuity of care and high adequacy of help."

Class 2 participants included equal numbers of men and women, mainly 40–55 years old, who lived mostly in supervised housing, and having alcohol and/or drug dependence. Few cases of schizophrenia, and no mood disorders, were reported for this class. Class 2 ranked first on continuity of care, and second on seriousness of needs, help given by services and adequacy of help. Class 2 was labeled "Middle-aged individuals living in supervised housing with serious needs, but with high levels of help from services, continuity of care and high adequacy of help."

Class 3 included mainly older participants, few of whom on welfare, and most living in autonomous housing. They were mainly affected by mood disorders. These participants reported the fewest and least serious needs; they ranked first on help given by both services and relatives, and on QOL. Adequacy of help was fully met for everyone in Class 3, which was labeled "Older individuals with mood disorders, living in autonomous housing and receiving high levels of help from services and relatives, with high QOL, and adequacy of help fully met."

Class 4 contained the highest number of older women with income sources other than welfare. Mood disorders dominated in this class; while the incidence of personality disorders and alcohol dependence was lowest of all classes and no cases of schizophrenia, anxiety disorder or drug dependence were reported. Class 4 participants received the least help from services, but ranked second to highest help given by relatives and QOL. They ranked fourth on number of professionals consulted, continuity of care and adequacy of help. Class 4 was labeled "Older women with mood disorders, and low scores on help given by services, continuity of care, and adequacy of help."

Class 5 had the highest number living in autonomous housing and the highest number of reported MDs, particularly personality disorders, anxiety and mood disorders. Class 5 participants also had the highest scores for both number and seriousness of needs. They scored lowest on, continuity of care, and adequacy of help, despite consulting the greatest number of professionals. Class 5 participants ranked fourth on help given by relatives and by services, and lowest on QOL. This Class was labeled "Individuals living in autonomous housing with multiple MDs, many and more serious needs, low QOL, and low levels of help given by services and by relatives, continuity of care, and adequacy of help."

Discussion

Results for this study, based on cluster analysis, revealed five profiles of individuals showing distinctive patterns of diagnoses, socio-demographic and clinical characteristics, as well as differing degrees of support from service. Client profiles in our study demonstrated certain similarities with those in previous studies, including a class of participants with multiple MDs in two studies similar to our Class 5 [49, 50]. A class of service users with low education levels, affected by schizophrenia and residing in supervised housing, similar to Class 1 in the present study was also identified previously [50]. However, unlike in other studies, [31, 32, 51], our cluster analysis did not reveal a class of service users with co-occurring SMDs and substance use disorders, as the proportions of drug dependence (11%) and alcohol dependence (9%) in this sample were relatively low. Class 2 individuals most closely approximated these

characteristics. Perfectly uniform classes would have been difficult to obtain, in any case, due to variations in sample sizes and types, recruitment areas, and variables included in different studies.

Our results revealed that adequacy of help was strongly related to continuity of care, help given by services and, to a lesser extent QOL and seriousness of needs. While Class 3 combined the highest or the second highest scores on help given by services, QOL, adequacy of help, and continuity of care, as well the lowest number and seriousness of needs, the Class with the lowest adequacy of help, Class 5, consistently ranked lowest, or second lowest, on each of these variables. Similar clusters of associations have been reported in previous studies [44]. Good continuity of care, in particular, supports the maintenance of regular healthcare, which, in turn, tends to decrease the seriousness of needs and improve QOL [52–54]. Studies have found that greater QOL among service users with SMDs was associated with lower seriousness of needs [20, 55]. Finally, the ability to meet needs implies that help given by services is proportional to seriousness of needs. The relationships between adequacy of help, socio-demographics (e.g. age, gender), and clinical variables (e.g. number of MDs, diagnoses) were not consistent among the five classes.

Classes 4 and 5 showed the lowest scores of adequacy of help, despite their high numbers of participants with post-secondary education, and income sources other than welfare, a result that may seem paradoxical. Yet, this may be explained by high prevalence of mood disorders among these participants, and their possible reluctance to accept living conditions or employment status below expectations for service users with higher educational attainment. Moreover, competitive labor market conditions may have increased stress among these individuals.

Results of this cluster analysis suggest that the type of housing may also affect adequacy of help, in addition to continuity of care and help given by services. Participants residing mainly in supervised housing, e.g. in Classes 1 and 2, may have received more regular professional support adapted to their needs through their housing. Service use tends to increase with regular care [56], facilitating therapeutic alliances between service users and professionals [57], and leading to more met needs and improved clinical outcomes. At the same time, individuals in Classes 4 and 5, most of who were living in autonomous housing, may have experienced greater seriousness of needs in domains such as food, self-care or home management, with possible implications for lower continuity of care or lower levels of help given by services, as well as lower adequacy of help. Class 3 seemed to be the exception, however, as adequacy of help was positive, and fully met. While socio-demographic (e.g. age, gender) and clinical (e.g. diagnosis) characteristics for this class were similar to those of Class 4, which ranked second to lowest on adequacy of help, differences between the two classes were related to levels of help given by both services and relatives, higher for Class 3, and above average continuity of care. Moreover, percentages of individuals over 55 were lower among Class 3 participants; as younger individuals, that is, they were presumably more functional and autonomous.

Adequacy of help was positive for Classes 1 and 2, but less so for Classes 4 and 5. Considerable differences existed between Class 1 and 2 participants, on the one hand, and Class 4 and 5 participants, on the other, in terms of socio-demographic, clinical and service utilization variables. Classes 4 and 5 consisted mainly of women with income sources other than welfare, living in autonomous housing, and affected by mood disorders but not schizophrenia; they received relatively more help from relatives than from services and reported low continuity of care. By contrast, Classes 1 and 2 included individuals (mainly men in Class 1,

both genders in Class 2) living in supervised housing, but not affected by mood disorders; these individuals received higher continuity of care and mainly help from services.

Class 2 participants were not affected by either schizophrenia or mood disorders, suggesting greater prevalence of SMDs not featured in the cluster analysis (e.g. schizophrenia spectrum disorders, delusion or other psychotic conditions). Less prevalent SMDs associated with a second diagnosis such as drug or alcohol dependence may explain the need for many to live in supervised housing. Drug and alcohol users probably remained abstinent, as they would otherwise be ineligible for supervised housing. Class 2 participants received the same help from services as those in Class 1, but more help from relatives. Help received from both sources may explain why Class 2 participants ranked second on continuity of care and on adequacy of help, despite their greater seriousness of needs, on which they ranked second to Class 5.

Classes 1 and 2 differed on gender, age, diagnoses, and help received; Class 1 individuals were mainly male, and counted more cases of schizophrenia, particularly among men, with low scores on help given by relatives. More men than women had schizophrenia, and from a younger ages [34]; they tended to drop school prematurely [58], which likely explains the high proportion of Class 1 individuals with only primary or secondary education. Most individuals with schizophrenia also experience difficulties entering the workforce [59], hence the high number in Class 1 on welfare. The high prevalence of Class 1 participants in supervised housing coincides with their very low level of help given by relatives compared to other classes. Yet they benefited from high continuity of care, including mental health follow-up, which may explain their elevated scores on adequacy of help.

Class 4 included fewer MDs, fewer and less serious needs relative to others. However, adequacy of help for Class 4 was lower than average. One possible explanation is that most Class 4 participants were 55 or older, which suggests reduced utilization of mental health services, less frequent appointments, and inadequate medication management [60]. Class 4 participants received help mainly from relatives, providing a complement to mental health services, and additional support for their basic and social needs [8]. Yet professional help for health needs remains critical, whether treatment for psychotic symptoms, psychological distress or physical illness. One study of 75 individuals, 55 and over, found that 70% did not receive appropriate help [60].

Class 5 tended to include more cases of anxiety and personality disorders than mood disorders, which seem to account for very low adequacy of help in this class. Service users with multiple MDs usually reported more serious needs than those with schizophrenia only [61], for example Class 1 participants. Moreover, QOL is generally lower among individuals affected by personality disorders [62, 63]. Class 5 participants, as high service users, consulted relatively more professionals, which coincides with the literature. However, continuity of care and help given by services and relatives was lower for this group than others, affecting adequacy of help. Accordingly, Class 5 participants likely used many services but were more likely to drop out.

Several limitations in this study should be acknowledged. First, like relatively few variables were introduced into the cluster analysis, our result may not be generalizable. Second, some variables as marital status, or employment, with a possible influence on adequacy of help, were excluded. Third, since the number of individuals with schizophrenia in our sample was low compared with other studies, these results may not apply to other populations with SMD. Finally, it should be reiterated that adequacy of help was a self-report measure.

Conclusions

Our research was innovative in testing multiple variables, including socio-demographic and clinical variables, service utilization, continuity of care, number of professionals consulted and help given by relatives and by services for a sample of service users with SMDs receiving treatment in the community. Results showed evidence that adequacy of help was more related to health service utilization than to the other variables tested. Concerning health services, adequacy of help was mainly associated with continuity of care and help given by services, but less so from the help given by relatives, or the number of professionals consulted. Concerning clinical variables, adequacy of help was generally lower among service users with multiple MDs, including mood, personality and anxiety disorders, but higher among participants with schizophrenia or SMDs other than mood disorders. Finally, in terms of socio-demographic variables, adequacy of help was mainly related to type of housing, as individuals in the two classes whose scores on adequacy of help were lower tended to be autonomous housing residents. Yet firm conclusions cannot be drawn on this point, as participants of the class with the highest adequacy of help (Class 3) were also mainly autonomous housing residents.

Results suggest that mental health services should be matched to the characteristic of the various users profiles as a way of improving the adequacy of help. Concerning Class 1, which included poorly educated men with schizophrenia, the high level of continuity of care and help given by supervised housing seemed particularly adequate to their needs. Intensive case management may have been an appropriate strategy for Class 2 participants, in order to transfer skills that support greater individual autonomy. Adequacy of help among these participants, some of whom were also affected by alcohol or drug dependence, would likely improve with integrated treatment for SMDs and substance use disorders, or from self-help groups such as Alcoholic Anonymous or Narcotic Anonymous. Improved access to a family physician or other primary health care providers should be sufficient for Class 3 participants, whose adequacy of help was fully met; whereas shared care, involving close collaboration between the psychiatrist and family physician would be a desirable service configuration for increasing both continuity of care and the level of help given by services for Class 4. Assertive community treatment might be particularly beneficial for Class 5 participants with multiple MDs, who were at elevated risk for hospitalization. The need for considerable improvement in the uptake of best-practices at the time of this study, whether in Quebec's mental health system, or elsewhere, is apparent.

Acknowledgements We would like to thank the Canadian Institute of Health Research (CIHR), all the individuals who participated in the research, as well to Judith Sabetti.

Funding The study was funded by the Canadian Institute of Health Research (CIHR-MOP-84512).

Compliance with Ethical Standards

Conflict of Interest The authors declare they have no conflicts of interest.

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

References

1. Guzman-Parra J, Moreno-Kustner B, Rivas F, Alba-Vallejo M, Hernandez-Pedrosa J, Mayoral-Cleries F. Needs, perceived support, and hospital readmissions in patients with severe mental illness. Community Ment Health J. 2017;54:189–96.
2. Ashoor FG, Khudhur IA. Assessment of needs: differences between male and female patients with schizophrenia needs in psychiatric hospitals in Baghdad city. Int J Soc Psychiatry. 2017;63:641–8.
3. Hensel JM, Banayan DJ, Cheng C, Langley J, Dewa CS. Client and key worker ratings of need in first-episode psychosis early intervention programmes. Early Interv Psychiatry. 2016;10(3):246–51.
4. Fleury MJ, Grenier G, Bamvita JM, Piat M, Tremblay J. Adequacy of help received among individuals with severe mental disorders. Admin Pol Ment Health. 2014;41(3):302-16.
5. Joska J, Flisher AJ. The assessment of need for mental health services. Soc Psychiatry Psychiatr Epidemiol. 2005;40(7):529–39.
6. Hayward M, Slade M, Moran PA. Personnality disorders and unmet needs among psychiatric inpatients. Psychiatr Serv. 2006;57(4):538–43.
7. Kulhara P, Avasthi A, Grover S, Sharan P, Sharma P, Malhotra S, et al. Needs of Indian schizophrenia patients: an exploratory study from India. Soc Psychiatry Psychiatr Epidemiol. 2010;45(8):809–18.
8. Middelboe T, Mackeprang T, Hansson L, Werdelin G, Karlsson H, Bjarnason O, et al. The Nordic study on schizophrenic patients living in the community. Subjective needs and perceived help. Eur Psychiatry. 2001;16(4):207–14.
9. Hansson L, Sandlund M, Bengtsson-Tops A, Bjarnason O, Karlsson H, Mackeprang T, et al. The relationship of needs and quality of life in persons with schizophrenia living in the community. A Nordic multi-center study. Nord J Psychiatry. 2003;57(1):5–11.
10. Slade M, Phelan M, Thornicroft G. A comparison of needs assessed by staff and by an epidemiologically representative sample of patients with psychosis. Psychol Med. 1998;28(3):543–50.
11. Simons L, Petch A. Needs assessment and discharge: a Scottish perspective. J Psychiatr Ment Health Nurs. 2002;9(4):435–45.
12. Lasalvia A, Bonetto C, Tansella M, Stefani B, Ruggeri M. Does staff-patient agreement on needs for care predict a better mental health outcome? A 4 year follow-up in a community service. Psychol Med. 2008;38:123–38.
13. Arvidsson H. Met and unmet needs of severely mentally ill persons–the psychiatric care reform in Sweden. Soc Psychiatry Psychiatr Epidemiol. 2003;38(7):373–9.
14. Arvidsson H. The development of needs in a group of severely mentally ill. A 10-year follow-up study after the 1995 Swedish mental health care reform. Soc Psychiatry Psychiatr Epidemiol. 2008;43(9):705–13.
15. Wiersma D, Nienhuis FJ, Giel R, Slooff CJ. Stability and change in needs of patients with schizophrenic disorders: a 15- and 17-year follow-up from first onset of psychosis, and a comparison between 'objective' and 'subjective' assessments of needs for care. Soc Psychiatry Psychiatr Epidemiol. 1998;33(2):49–56.
16. Lasalvia A, Bonetto C, Salvi G, Bissoli S, Tansella M, Ruggeri M. Predictors of changes in needs for care in patients receiving community psychiatric treatment: a 4-year follow-up study. Acta Psychiatr Scand Suppl. 2007;116(437):31–41.
17. Ruggeri M, Nosè M, Bonetto C, Cristofalo D, Lasalvia A, Salvi G, et al. Changes and predictors of change in objective and subjective quality of life: multiwave follow-up study in community psychiatric practice. Br J Psychiatry. 2005;187:121–30.
18. Bengtsson-Tops A, Hansson L. Clinical and social needs of schizophrenic outpatients living in the community: the relationship between needs and subjective quality of life. Soc Psychiatry Psychiatr Epidemiol. 1999;34(10):513–8.
19. Slade M, Leese M, Taylor R, Thornicroft G. The association between needs and quality of life in an epidemiologically representative sample of people with psychosis. Acta Psychiatr Scand. 1999;100(2):149–57.
20. Lasalvia A, Bonetto C, Malchiodi F, Salvi G, Parabiaghi A, Tansella M, et al. Listening to patients' needs to improve their subjective quality of life. Psychol Med. 2005;35(11):1655–65.
21. Fleury MJ, Grenier G, Bamvita JM. Predictive typology of subjective quality of life among participants with severe mental disorders after a five-year follow-up: a longitudinal two-step cluster analysis. Health Qual Life Outcomes. 2015;13:150. https://doi.org/10.1186/s12955-015-0346-x.
22. Fleury MJ, Grenier G, Bamvita JM, Tremblay J, Schmitz N, Caron J. Predictors of quality of life in a longitudinal study of users with severe mental disorders. Health Qual Life Outcomes. 2013;11:92. https://doi.org/10.1186/1477-7525-11-92.
23. Björkman T, Hansson L. Predictors of improvement in quality of life of long-term mentally ill individuals receiving case management. Eur Psychiatry. 2002;17(1):33–40.

24. Henderson C, Phelan M, Loftus L, Dall'Agnola R, Ruggeri M. Comparison of patient satisfaction with community-based vs. hospital psychiatric services. Acta Psychiatr Scand. 1999;99(3):188–95.
25. Leese M, Johnson S, Slade M, Parkman S, Kelly F, Phelan M, et al. User perspective on needs and satisfaction with mental health services. PRiSM Psychosis Study. 8. Br J Psychiatry. 1998;173:409–15.
26. Ruggeri M, Leese M, Slade M, Bonizzato L, Tansella M. Demographic, clinical, social and service variables associated with higher needs for care in community psychiatric service patients. The South Verona outcome project 8. Soc Psychiatry Psychiatr Epidemiol. 2004;39(1):60–8.
27. Fleury MJ, Piat M, Grenier G, Bamvita JM, Boyer R, Lesage A, et al. Components associated with adequacy of help for consumers with severe mental disorders. Admin Pol Ment Health. 2010;37(6):497–508.
28. Song LY, Singer M. The social functioning of persons with chronic mental illness: an empirical typology of consumers and correlates of social functioning. Int J Soc Psychiatry. 2001;47(1):36–51.
29. Herman SE, Mowbray CT. Client typology based on functioning level assessments: utility for service planning and monitoring. J Ment Health Adm. 1991;18(2):101–15.
30. Luke DA, Mowbray CT, Klump K, Herman SE, BootsMiller B. Exploring the diversity of dual diagnosis: utility of cluster analysis for program planning. J Ment Health Adm. 1996;23(3):298–316.
31. Huynh C, Tremblay J, Fleury MJ. Typologies of individuals attending an addiction rehabilitation center based on diagnosis of mental disorders. J Subst Abus Treat. 2016;71:68–78.
32. Urbanoski K, Kenaszchuk C, Veldhuizen S, Rush B. The clustering of psychopathology among adults seeking treatment for alcohol and drug addiction. J Subst Abus Treat. 2015;49:21–6.
33. Guzzetta F, Miglio R, Santone G, Picardi A, Norcio B, Bracco R, et al. First-ever admitted psychiatric inpatients in Italy: clinical characteristics and reasons contributing to admission: findings from a national survey. Psychiatry Res. 2010;176(1):62–8.
34. Subramaniam M, Zheng H, Soh P, Poon LY, Vaingankar JA, Chong SA, et al. Typology of people with first-episode psychosis. Early Interv Psychiatry. 2016;10(4):346–54. https://doi.org/10.1111/eip.12178.
35. Ochoa S, Huerta-Ramos E, Barajas A, Iniesta R, Dolz M, Banos I, et al. Cognitive profiles of three clusters of patients with a first-episode psychosis. Schizophr Res. 2013;150(1):151–6.
36. Reser MP, Allott KA, Killackey E, Farhall J, Cotton SM. Exploring cognitive heterogeneity in first-episode psychosis: what cluster analysis can reveal. Psychiatry Res. 2015;229(3):819–27.
37. Casper ES, Donaldson B. Subgroups in the population of frequent users of inpatient services. Hosp Community Psychiatry. 1990;41(2):189–91.
38. Fisher S, Stevens RF. Subgroups of frequent users of an inpatient mental health program at a community hospital in Canada. Psychiatr Serv. 1999;50(2):244–7.
39. Lora A, Cosentino U, Rossini MS, Lanzara D. A cluster analysis of patients with schizophrenia in community care. Psychiatr Serv. 2001;52(5):682–4.
40. Rocca P, Montemagni C, Mingrone C, Crivelli B, Sigaudo M, Bogetto F. A cluster-analytical approach toward real-world outcome in outpatients with stable schizophrenia. Eur Psychiatry. 2016;32:48–54.
41. Bridges AJ, Villalobos BT, Anastasia EA, Dueweke AR, Gregus SJ, Cavell TA. Need, access, and the reach of integrated care: a typology of patients. Fam Syst Health. 2017;35(2):193–206.
42. Perreault M, Toure el H, Fleury MJ, Beaulieu S, Caron J. Development of a typology of antidepressant users: the role of mental health disorders and substance use. J Popul Ther Clin Pharmacol. 2016;23(1):e90–102.
43. Fleury MJ, Grenier G, Bamvita JM, Perreault M, Caron J. Typology of adults diagnosed with mental disorders based on socio-demographics and clinical and service use characteristics. BMC Psychiatry. 2011;11:67. https://doi.org/10.1186/1471-244X-11-67.
44. Fleury MJ, Grenier G, Bamvita JM. Comparing perceived adequacy of help received among different classes of individuals with severe mental disorders at five-year follow-up: a longitudinal cluster analysis. Community Ment Health J. 2018;54(5):540–54.
45. Tremblay J, Bamvita JM, Grenier G, Fleury MJ. Utility of the Montreal assessment of need questionnaire for community mental health planning. J Nerv Ment Dis. 2014;202(9):677–87.
46. Baker F, Jodrey D, Intagliata J. Social support and quality of life of community support clients. Community Ment Health J. 1992;28(5):397–411.
47. Durbin J, Goering P, Streiner DL, Pink G. Continuity of care: validation of a new self-report measure for individuals using mental health services. J Behav Health Serv Res. 2004;31(3):279–96.
48. Gravel R, Beland Y. The Canadian community health survey: mental health and well-being. Can J Psychiatr. 2005;50(10):573–9.
49. Perreault M, Mitchell E, Toure el H, Fleury MJ, Caron J. Typology of sleep medication users and associated mental health and substance use from a Montreal epidemiological study. J Popul Ther Clin Pharmacol. 2014;21(2):e233–45.

50. Fleury MJ, Grenier G, Bamvita JM, Tremblay J. Typology of persons with severe mental disorders. BMC Psychiatry. 2013;13:137. https://doi.org/10.1186/1471-244X-13-137.
51. Aubry T, Klodawsky F, Coulombe D. Comparing the housing trajectories of different classes within a diverse homeless population. Am J Community Psychol. 2012;49(1–2):142–55.
52. Adair CE, McDougall GM, Mitton CR, Joyce AS, Wild TC, Costigan N, et al. Continuity of care and health outcomes among persons with severe mental illness. Psychiatr Serv. 2005;56(9):1061–9.
53. Puntis S, Rugkasa J, Forrest A, Mitchell A, Burns T. Associations between continuity of care and patient outcomes in mental health care: a systematic review. Psychiatr Serv. 2015;66(4):354–63.
54. Sweeney A, Rose D, Clement S, Jichi F, Jones IR, Burns T, et al. Understanding service user-defined continuity of care and its relationship to health and social measures: a cross-sectional study. BMC Health Serv Res. 2012;12:145. https://doi.org/10.1186/1472-6963-12-145.
55. Hansson L, Björkman T. Are factors associated with subjective quality of life in people with severe mental illness consistent over time–A 6-year follow-up study. Qual Life Res. 2007;16(1):9–16.
56. Leaf PJ, Livingston MM, Tischler GL, Weissman MM, Holzer CE 3rd, Myers JK. Contact with health professionals for the treatment of psychiatric and emotional problems. Med Care. 1985;23(12):1322–37.
57. Junghan UM, Leese M, Priebe S, Slade M. Staff and patient perspectives on unmet need and therapeutic alliance in community mental health services. Br J Psychiatry. 2007;191:543–7.
58. Boyle MH, Georgiades K. Perspectives on child psychiatric disorder in Canada. In: Cairney J, Streiner DL, editors. Mental disorder in Canada: An epidemiological perspective. Toronto, Buffalo, London: University of Toronto Press; 2010. p. 205–26.
59. Reddy LF, Llerena K, Kern RS. Predictors of employment in schizophrenia: the importance of intrinsic and extrinsic motivation. Schizophr Res. 2016;176(2–3):462–6.
60. Cummings SM, Kropf NP. Formal and informal support for older adults with severe mental illness. Aging Ment Health. 2009;13(4):619–27.
61. Wright S, Gournay K, Glorney E, Thornicroft G. Dual diagnosis in the suburbs: prevalence, need, and in-patient service use. Soc Psychiatry Psychiatr Epidemiol. 2000;35(7):297–304.
62. Cotton SM, Gleeson JF, Alvarez-Jimenez M, McGorry PD. Quality of life in patients who have remitted from their first episode of psychosis. Schizophr Res. 2010;121(1–3):259–65.
63. Feenstra DJ, Hutsebaut J, Laurenssen EM, Verheul R, Busschbach JJ, Soeteman DI. The burden of disease among adolescents with personality pathology: quality of life and costs. J Personal Disord. 2012;26(4):593–604.