FROM RESIDENTIAL CARE TO SUPPORTED HOUSING

EDITED BY: Angelo Barbato, Carol Ann Harvey, Alain Lesage, Barbara D'Avanzo
and Antonio Maone

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FROM RESIDENTIAL CARE TO SUPPORTED HOUSING

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EDITORIAL
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Editorial: From Residential Care to Supported Housing

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Editorial on the Research Topic

From Residential Care to Supported Housing

Residential care and supported housing are two models of accommodation for people with mental disorders in post-institutional mental health systems. In residential care, the emphasis is on treatment and rehabilitation provided by professionals in staffed facilities belonging to community psychiatric services, whereas in supported housing the emphasis is on outreach need-led support to people living on a permanent basis in their own home integrated in the community.

The supported housing approach grew from a dissatisfaction with the original model of residential facilities, developed in the early wave of downsizing or closure of mental hospitals, based on the concept of a "linear continuum", in which persons were supposed to gradually progress from hospitals, through less supervised accommodations, halfway houses, group homes, to reach finally independent housing. However, this model failed in most cases to move people toward independent lives and trapped many people in small segregated residential settings. This was also due to the confusion between accommodation and care. Instead, a core aspect of the supported housing model is the separation between accommodation and treatment services.

The papers by Farkas and Coe and by Dorvil and Tousignant-Groulx present conceptual and historical overviews of these developments in the USA and Canada, suggesting a number of relevant questions, addressed by other papers representing the multifaceted nature of community-based residential settings. The challenges to be met include the balance of isolation versus treatment and support (Fossey et al.; Dorvil and Tousignant-Groulx), the difficulties of assessing the effectiveness of supported housing models (Killaspy et al.), and the evidence that the recovery orientation of a residential facility is not linked to facility type (Rapisarda et al.; Fletcher et al.). All papers, taken together, point out that a new home represents a turning point for people with mental health problems. Arguably, access to adequate housing is both a human right and a necessary prerequisite for recovery.

Worldwide surveys of mental health services and literature in the field both reveal an amazing array of residential solutions and a lack of agreement on the definition and classification of residential models (1). Although some recent proposals tried to lay the foundations for a coherent classification (2), this issue is still far from settled and is a barrier to practice, policy and research.

Apostolopoulou et al. and Parker et al. shed light on this by describing the characteristics of transitional residential rehabilitation models and their residents, in Greece and Australia, respectively. Fletcher et al. describe another Australian residential model focused on providing sub-acute clinical mental health care integrated with intensive recovery-focused psychosocial input.

In regard to the suitability of supported housing for all patients, independently from the degree of their autonomy, it is worth noting that although almost all participants in the "At Home" supported housing intervention experienced neurocognitive deficits, these did not prevent the achievement of housing stability (Stergiopoulos et al.), showing that housing stability can be achieved even for those who cannot be completely independent. A promising methodology to study the attributes of these diverse housing settings and associated outcomes for groups of individuals is reported by Felx et al., who developed a conceptual model of housing and community-based residential settings based on stakeholder perceptions and values, and the need to combine not always concordant views, as shown by Rapisarda et al.

Getting a house may not be all and requires, in many cases, support to get the best from living independently. This indicates that the model of supported housing should be sustained by specific and more cogent research of how support should be provided, as suggested by Fossey et al., even when involving peer workers. However, problems associated with supported housing should be acknowledged and may include housing affordability, location in unattractive neighborhoods, complex organization of outreach services, failure to provide flexible support when needed, boundary problems between health and social services, isolation of people, and safety of residents.

Clearly, closing large hospitals, questioning custodial care models, promoting supported housing, distinguishing housing from treatment, and enhancing the presence and roles of peer support workers (Fossey et al.; Rapisarda et al.; Meurk et al.) are being pursued. The latest developments will depend on integration between the social sector (housing) and the health sector (mental health care) in collaboration with policy at local and countrywide level.

Research methods like randomized trials are rarer in the social sector than the health sector, probably due to the long divide between those sectors in terms of models, financing, and power (3). Killaspy et al. present the problems in studying the efficacy of supported housing models in their unsuccessful feasibility study, pointing out consumer and staff barriers to randomization in this housing issue.

A new generation of social scientists demonstrated that policy decisions can be informed by pragmatic randomized trials of socio-political interventions: the "At Home" demonstration project in Canada (Stergiopoulos et al.) showed how a cluster randomized trial can be conducted on issues of housing stability for mentally ill homeless, with mixed methods to describe outcomes in housing and experience of improved quality of life. This confirms that the primary outcome of supported housing should be to keep people in independent accommodation, not improvement of symptoms or skills.

Attention should be paid to the risk of domination by one supported housing model. Hospital acute beds are required as well as an array of residential services in a balanced mental health system. At a given point, shelters that represent veritable social lifeboats, tertiary care facilities, supervised residential settings, or apartments may represent the best balance between the need for socialization, treatment, crisis support, rehabilitation, and autonomy. In fact, the adoption of a supported housing approach does not necessarily mean that time-limited residential alternatives to hospital admission should not be available. Nonetheless, the availability of a variety of solutions should not open the door to an uncontrolled increase of small institutions, which in turn may hinder a recovery oriented approach.

Research should prioritize evaluation of the quality of the existing residential services, standards and population-based needs, as well as more pragmatic and innovative randomized trials. The role of peer support workers in housing and home care teams should be studied with trials using mixed methods (4). Anyway, the choice of the best methods depends on the nature of the investigated issues. We should also identify meaningful questions helping mental health care to overcome custodial approaches, particularly in the area of residential and accommodation needs which is highly exposed to such risk. The paper by Farkas and Coe contains a serious warning: while evidence has been accumulating about the benefits of the supported housing model, the risk of going back to a more institutional approach, deeply present in the mental health care system, cannot be overlooked.

AUTHOR CONTRIBUTIONS

AB, BD'A, CH, AL, and AM contributed to the design, review, and editing of the Research Topic and to the editorial summarizing it.

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CLINICAL TRIAL
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Feasibility Randomised Trial Comparing Two Forms of Mental Health Supported Accommodation (Supported Housing and Floating Outreach); a Component of the QuEST (Quality and Effectiveness of Supported Tenancies) Study

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Background: Mental health supported accommodation services are implemented across England, usually organised into a 'step-down' care pathway that requires the individual to repeatedly move as they gain skills and confidence for more independent living. There have been no trials comparing the effectiveness of different types of supported accommodation, but two widely used models (supported housing and floating outreach) have been found to provide similar support. We aimed to assess the feasibility of conducting a large-scale trial comparing these two models.

Methods: Individually randomised, parallel group feasibility trial in three regions of England (North London, East London, and Cheltenham and Gloucestershire). We aimed to recruit 60 participants in 15 months, referred to supported accommodation, randomly allocated on an equal basis to receive either a local supported housing or floating outreach service. We assessed referrals to the trial, participants recruited, attrition, time from recruitment to moving into either type of supported accommodation, and feasibility of masking. We conducted a process evaluation to examine our results further.

Results: We screened 1,432 potential participants, of whom 17 consented to participate, with 8 agreeing to randomisation (of whom 1 was lost to attrition) and 9 participating in naturalistic follow-up. Our process evaluation indicated that the main obstacle to recruitment was staff and service user preferences for certain types of supported accommodation or for specific services. Staff also felt that randomisation compromised their professional judgement.

Conclusions: Our results do not support investment in a large-scale trial in England at this time.

Trial registration: UK CRN Portfolio database, Trial ID: ISRCTN19689576.

Trial funding: National Institute of Health Research (RP-PG-0707-10093).

Keywords: QuEST, mental health, supported accommodation, feasibility, trial, supported housing, floating outreach

INTRODUCTION

In England, one third of working-age adults with severe mental health problems (around 60,000 people) reside in supported accommodation provided by health and social services and housing associations (1, 2). These services have been categorised into three main types (3): residential care homes (offering high levels of longer-term support, 24 h a day to individuals with high needs), supported housing (offering time-limited, building-based support to individuals in single or shared tenancies), and floating outreach (offering flexible, visiting support to people in a permanent tenancy). The costs vary from around £150 per person per week for floating outreach to around £500 for residential care (4). The annual cost to the health and social care budget is therefore hundreds of millions of pounds.

The majority of people who require these services have complex mental health needs and functional impairments that impair their ability to manage activities of daily living. In England, individuals often graduate from supported housing services to floating outreach as their skills and confidence to manage their own tenancy increase. However, previous studies suggest that there are few differences in the amount and type of support provided to people in these two models and individuals dislike having to move home repeatedly as they progress along this pathway (3–5). Furthermore, varying preferences for different models have been found between service users, staff and family members, with service users tending to prefer more independent, permanent accommodation and staff and family members preferring the person to reside in more supported settings (6–8). Conversely, some service users report that independent tenancies are socially isolating (9). In addition, within a highly pressured mental health system, it is likely that allocation of accommodation may be driven more by availability than clinical need.

There have been very few trials comparing the effectiveness of different models of mental health supported accommodation and those that have been conducted have tended to focus on homeless populations and none have been conducted in the United Kingdom (10, 11). We therefore do not know whether individuals with severe and complex mental health needs are following the most cost-effective routes to independence, i.e. whether support delivered to service users in their own homes through floating outreach is more effective than the time-limited 'step-down' approach provided in staffed supported housing facilities. In short, we do not know whether more tailored support delivered to service users in their own homes through floating outreach is more acceptable, more individualised, and more cost-effective than a standard level of support provided in staffed facilities. There are similarities here with the 'train and place' and 'place and train' supported employment models, the latter being most commonly delivered through Individual Placement and Support, which has been shown to be more effective at helping service users to achieve competitive employment than graduated, sheltered employment schemes (12). The clinical uncertainty relating to supported accommodation justifies assessment through a randomised controlled trial, but, given the logistic challenges, there is first a need to assess the feasibility of conducting such a trial.

This study comprised the fourth component of the QuEST study (Quality and Effectiveness of Supported Tenancies for people with mental health problems; http://www.ucl.ac.uk/quest), the first national research programme to investigate the provision, quality, and effectiveness of mental health supported accommodation services in England. The programme included adaptation of a service quality assessment tool and client satisfaction tool for these settings (13, 14), a national survey (15), a cohort study investigating longer-term outcomes and a qualitative investigation of staff and service user experiences (15). This paper reports on the feasibility randomised trial comparing the effectiveness of supported housing and floating outreach.

We aimed to assess the feasibility, sample size, and most appropriate outcomes for a large-scale trial to compare the clinical and cost-effectiveness of these two models of mental health supported accommodation commonly used in England. Specifically, we aimed to establish whether participant recruitment and randomisation to different types of supported accommodation was possible, given the potentially complex logistics involved.

MATERIALS AND METHODS

Design

Individually randomised, parallel group feasibility trial.

Protocol

The full trial protocol can be accessed via the corresponding author's institution's website (www.ucl.ac.uk/quest/protocol).

Setting

The feasibility trial was conducted in three sites that provided both types of supported accommodation and where the study team had good links (North London – Camden and Islington; East London – Tower Hamlets, Newham, Hackney; Gloucestershire and Cheltenham).

Sample Size

As this was a feasibility trial, a formal sample size calculation was not required but we set a target of recruiting and randomising 60 participants from across the three study sites over 15 months. We aimed to recruit 20 participants per site on the basis that any fewer would make a large-scale trial unfeasible.

Inclusion/Exclusion Criteria

All service users in the three study sites referred to either supported housing or floating outreach services who had housing rights in the local area and were subject to the Care Programme Approach (to ensure input from a community mental health team for all participants) were eligible for inclusion. Those who lacked capacity to give informed consent were not eligible.

Recruitment Process

Each of the three sites had a system for referral of service users to local supported accommodation services. All those referred to supported housing or floating outreach were considered for potential participation in the study. We first met with the relevant staff at each site to clarify the purposes of the study and local referral processes. A researcher at each study site liaised with the personnel coordinating the referrals system and clinicians making referrals. They identified appropriate referrals eligible for participation in the study who were then contacted for informed consent to participate. We did not contact individuals whom the clinical team considered inappropriate. We were aware of the potential recruitment challenges facing us and therefore, in addition, service users who did not consent to randomisation were offered participation in a naturalistic cohort whereby they gave informed consent to complete the same research interviews as trial participants but their supported accommodation was not allocated randomly. Recruitment took place over 15 months from June 2015.

After 6 months, we decided to adjust our approach to try to increase recruitment. In addition to the processes described above, researchers met with the managers of acute inpatient wards and community mental teams in the three sites to identify any individuals being considered for referral to supported housing who had not yet been referred.

Randomisation and Masking

Participants were randomly allocated on an equal basis to receive either a local supported housing or floating outreach service. Computer-generated randomisation was carried out independently of the research team by a statistician from the Pragmatic Clinical Trials Unit at Queen Mary's University London and stratified by site. The outcome of randomisation was communicated to the QuEST project manager who informed the local referrals coordinator and referrer, who then processed the participant's supported accommodation allocation accordingly.

We explored the feasibility of using a telephone interview to collect follow-up data from service users. At 12-month follow-up, the researcher met with the service user participant and then telephoned a second researcher (masked to the participant's supported accommodation allocation) who completed one instrument from the interview battery (Manchester Short Assessment of Quality of Life – MANSA (16)) with the participant. This measure was selected as all others would have invalidated the masking by revealing the participant's allocation.

Comparison Services

Supported housing services provided a constant level of staffing on-site to a number of service users living in individual or shared tenancies with the expectation of move-on within 2 years. Floating outreach services provided visiting support of flexible intensity to service users living in a permanent independent tenancy. In terms of the simple taxonomy for supported accommodation (STAX-SA) (17), supported housing services are Types 2 and 3, whilst floating outreach services are Type 4.

Content of Care

Content of care provided in all services was assessed using the Quality Indicator for Rehabilitative Care – Supported Accommodation version (QuIRC-SA) (13), completed with the service manager once for each service, 6 months after the participant was randomised (assuming they had moved to the allocated accommodation by then). This comprehensive, standardised measure provides descriptive data on resources and ratings of the service's quality of care on seven domains and was completed once per service.

Data Collection

We collected the following metrics to inform the feasibility of a larger trial: number of referrals to the trial; number of participants recruited; attrition (i.e. number of participants who withdrew consent to continue with the research, declined to move to the allocated service, or could not be located at follow-up); and time from recruitment to moving into either type of supported accommodation. We assessed the feasibility of using a range of potential standardised outcome measures [Client Assessment of Treatment – Supported Accommodation version (14), Clinician Alcohol and Drugs Scale (18), The Life Skills Profile (19), MANSA (16), Social Outcomes Index (20), Brief Psychiatric Rating Scale (BPRS) (21), Time Use Survey (22), Time Use Survey (22), Health of the Nation Outcome Scale (23) and Scale to Assess Therapeutic Relationship – service user (24)] through collection of data from service users, support staff and service managers at recruitment, and 6 and 12 months after recruitment as shown in **Table 1**.

Qualitative Evaluation

An additional qualitative component was conducted to identify themes to inform the feasibility of a larger trial. We aimed to interview 10 service user participants and 10 staff to explore their experiences of the trial, the process of randomisation, and their views on the usefulness and feasibility of a larger-scale trial. Interviews were recorded, independently transcribed, and anonymised. Text data were entered into a software package (NVivo v.10 (27)) to assist with management and coding. The interviews were analysed using thematic content analysis; a coding frame was developed by one of the researchers (RMc), with supervision from SP and GL, which was expanded and modified to include further codes as new themes and sub-themes emerged in the course of interviews and analysis.

TABLE 1 | Data collection summary.

Outcome measure	Assessment of	Gathered from
Recruitment		
Proforma	Sociodemographic details	Service user (+ case notes)
Brief Psychiatric Rating Scale (BPRS) (21)	Symptoms	Service user
Manchester Short Assessment of Quality of Life (MANSA) (16)	Quality of life	Service user
Time Use Survey (22)	Activities	Service user
Social Outcomes Index (20)	Social outcomes	Service user
Life Skills Profile (19)	Social function	Staff
Health of the Nation Outcome Scale (23)	Clinical status	Staff
Time Use Survey (22)	Activities	Staff
Clinician Alcohol and Drugs Scale (18)	Substance misuse	Staff
6-month Follow-up		
Time Use Survey (22)	Activities	Service user
Scale to Assess Therapeutic Relationship – service user (24)	Engagement	Service user
Time Use Survey (22)	Activities	Staff
Scale to Assess Therapeutic Relationship – clinician (24)	Engagement	Staff
12-month Follow-up		
Brief Psychiatric Rating Scale (21)	Symptoms	Service user
Manchester Short Assessment of Quality of Life (19)	Quality of life	Service user
Time Use Survey (22)	Activities	Service user
Social Outcomes Index (20)	Social outcomes	Service user
Client Assessment of Treatment – Supported Accommodation version (14)	Satisfaction with care	Service user
Scale to Assess Therapeutic Relationship – service user (24)	Engagement	Service user
Life Skills Profile (19)	Social function	Staff
Health of the Nation Outcome Scale (23)	Clinical status	Staff
Time Use Survey (22)	Activities	Staff
Clinician Alcohol and Drugs Scale (18)	Substance misuse	Staff
Scale to Assess Therapeutic Relationship – Clinician (24)	Engagement	Staff
Client Service Receipt Inventory (25)	Costs of care	Service user and staff and case notes
EuroQoL – 5D (26)	Cost-effectiveness	Service user

Data Analysis

We followed CONSORT guidelines on the analysis of feasibility trials for the presentation of our results (28). Our analysis was mainly descriptive and focused on the recruitment rate, acceptability of randomisation to participants and staff, ease of collection of data, characteristics of participants, other baseline and outcome variables, the feasibility of masking outcome assessments, loss to follow-up, and any adverse events.

Cost-Effectiveness

Service use in the 3 months before follow-up was assessed through service user interviews and corroborated by staff and case note review, using the Client Service Receipt Inventory (25) and combined with unit costs obtained from the service manager. Service costs were derived from expenditure data (29). An instrument used to measure quality of life, the EuroQoL-5 Dimension (EQ-5D) (26), was completed with service users at 12 months follow-up for assessment of cost-effectiveness.

Role of the Funding Source

The study was funded by the National Institute of Health Research (RP-PG-0610-10097). The funders had no role in the collection, analysis, or interpretation of data; in the writing of the manuscript; or in the decision to submit for publication. The views expressed are those of the authors and not necessarily those of the NHS, the NIHR or the Department of Health.

Ethics Approval

The study was approved by the Liverpool Central Research Ethics Committee (ref. 15/NW/0252).

RESULTS

Feasibility Metrics

We screened 1,432 potential participants, of whom 87 were ineligible (not subject to the Care Programme Approach: n = 63; no recourse to public funds/housing: n = 24). Of the remaining 1,345,456 were assessed as inappropriate for participation by the researchers (no plans for move-on/new admission: n = 194; already housed: n = 150; no response from clinical team: n = 60; referral withdrawn: n = 22; previously screened: n = 13; eviction in process: n = 8; moved out of area: n = 5; clinician refused access: n = 4). A further 851 were deemed inappropriate for participation by their clinical team. The most common reasons were that the individual was felt to have a high level of support needs and was inappropriate for floating outreach (n = 524) or that they had low support needs and were inappropriate for supported housing (n = 137). In total, 17 service users consented to participate, with 8 agreeing to randomisation and 9 participating in the naturalistic arm. Participant flows are shown in **Figure 1**.

Attrition

Of the 17 recruited participants, 3 were lost to follow-up [1 randomised (declined follow-up); 2 naturalistic group (1 died; 1 declined follow-up)].

Time from Recruitment to Moving

Of the participants who were randomised, 3/8 (38%) moved to their allocated supported accommodation, which was supported housing in each case. This information was collected for the one randomised participant who declined follow-up via the key member of staff (they had consented to these data being collected via staff at recruitment). The median time from recruitment to moving was 4 months (IQR = 1.5–5.5). Of the five remaining randomised participants, three moved to another supported accommodation service, but not the service type they had been randomly allocated to (all three moved to a supported housing service when they were randomly allocated to move to floating outreach), one moved to their family home, and one was admitted to the hospital. Of the nine participants recruited to the

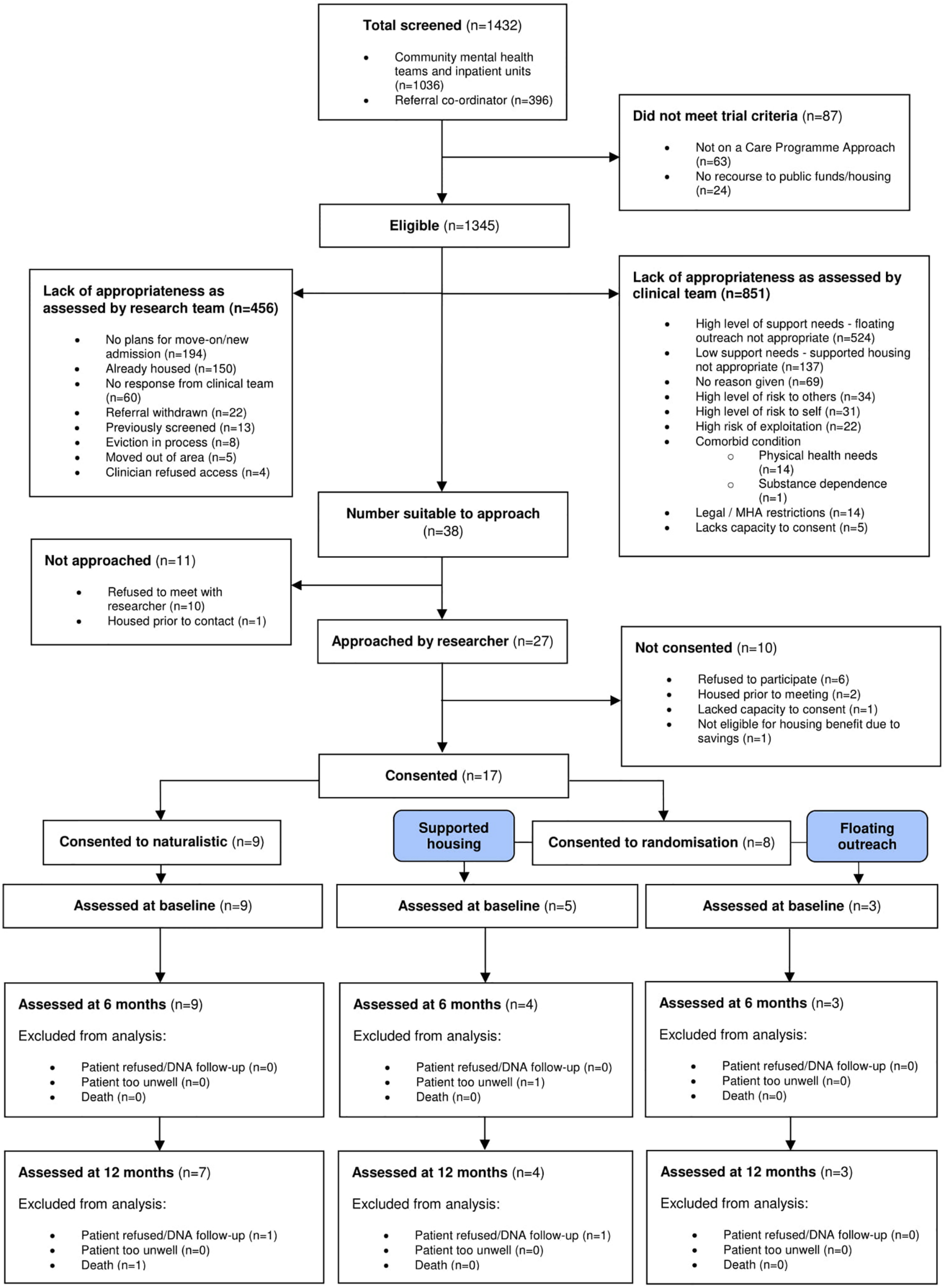

FIGURE 1 | CONSORT diagram.

naturalistic group, three moved to a supported housing service, one remained in their original supported housing service, one moved to an independent tenancy with floating outreach support, three moved to an independent tenancy without floating outreach support, and one died.

Content of Care

The Quality Indicator for Rehabilitative Care – Supported Accommodation version (QuIRC-SA) (12) was completed with the managers of the three services that participants moved to (data not reported).

Participant characteristics. The mean age of participants was 38.8 years (SD = 10.1), most were male (12/17, 71%), almost half were white (8/17, 47%), and most had a diagnosis of schizophrenia (14/17, 82%). Participants' characteristics are presented in **Table 2**.

Collection of outcome data. Data completion rates were high (100% at recruitment, 76–100% at both follow-up points). The Time Use Survey (22) and the Scale to Assess Therapeutic Relationship (24) had the lowest completion rates. The completeness of data collection is presented in **Table 3**. Due to the small numbers of participants recruited, it was not possible to conduct any quantitative outcome analyses.

Masking of Researchers

Telephone administration of the MANSA (16) by a researcher who was unaware of the participant's supported accommodation allocation was completed successfully (without revealing the allocation) for all seven randomised participants interviewed at 12 months follow-up.

Harms/Unintended Consequences

No harms or unintended consequences occurred during the study.

TABLE 2 | Demographic characteristics of participants at recruitment.

	Naturalistic (N = 9)	Randomised (N = 8)	Overall (N = 17)
Age (years), mean (SD)	38·8 (10.7)	38·9 (10.1)	38·8 (10.1)
Male	6 (66.7)	6 (75.0)	12 (70.6)
Ethnicity—white	4 (44.4)	4 (50.0)	8 (47.1)
Diagnosis			
Schizophrenia	8 (88.9)	6 (75.0)	14 (82.4)
Bipolar disorder	1 (11.1)	1 (12.5)	2 (11.8)
Post-traumatic stress disorder	0 (0.0)	1 (12.5)	1 (5.9)
Length of contact with services (years), mean (SD)	12·6 (9.6)	8·3 (6.3)	10·5 (8.3)
Previous accommodation			
House/flat (owner occupied)	2 (22.2)	1 (12.5)	3 (17.6)
House/flat (housing association/council)	0 (0.0)	1 (12.5)	1 (5.9)
House/flat (private rent)	2 (22.2)	2 (25.0)	4 (23.5)
Hostel/group home	0 (0.0)	4 (50.0)	4 (23.5)
Sheltered housing	3 (33.3)	0 (0.0)	3 (17.6)
Residential home	1 (11.1)	0 (0.0)	1 (5.9)
Hospital ward	1 (11.1)	0 (0.0)	1 (5.9)

TABLE 3 | Completeness of data collection at each time point.

Outcome measure	Interviewee	% of participants providing data (*N* = 17)	Mean % of scale completed
Baseline			
Brief Psychiatric Rating Scale	Service user	17 (100%)	100%
Manchester Short Assessment of Quality of Life	Service user	17 (100%)	90%
Time Use Survey	Service user	17 (100%)	100%
Social Outcomes	Service user	17 (100%)	99%
EQ-5D	Service user	17 (100%)	100%
Client Service Receipt Inventory	Service user	17 (100%)	—
Life Skills Profile	Staff	17 (100%)	98%
Health of the Nation Outcome Scale	Staff	17 (100%)	98%
Time Use Survey	Staff	17 (100%)	100%
Clinician Alcohol and Drugs Scale	Staff	17 (100%)	100%
6-month Follow-up			
Time Use Survey	Service user	16 (94%)	94%
Scale to Assess Therapeutic Relationship – patient	Service user	15 (88%)	88%
Time Use Survey	Staff	14 (82%)	78%
Scale to Assess Therapeutic Relationship – clinician	Staff	17 (100%)	100%
12-month Follow-up			
Brief Psychiatric Rating Scale	Service user	14 (82%)	82%
Manchester Short Assessment of Quality of Life	Service user	14 (82%)	75%
Time Use Survey	Service user	14 (82%)	82%
Social Outcomes	Service user	14 (82%)	82%
Client Assessment of Treatment – Supported Accommodation version	Service user	13 (76%)	74%
Scale to Assess Therapeutic Relationship – patient	Service user	13 (76%)	76%
EQ-5D	Service user	14 (82%	100%
Client Service Receipt Inventory	Service user	14 (82%	—
Life Skills Profile	Staff	15 (88%)	88%
Health of the Nation Outcome Scale	Staff	15 (88%)	85%
Time Use Survey	Staff	11 (65%)	65%
Clinician Alcohol and Drugs Scale	Staff	15 (88%)	88%
Scale to Assess Therapeutic Relationship – clinician	Staff	14 (82%)	82%

Economic Evaluation

The Client Service Receipt Inventory (CSRI) (25) and EQ-5D (26) data were collected at recruitment and 12-month follow-up. Due to the very low numbers, it was not feasible to explore any cost-effectiveness analyses.

Qualitative Findings

We interviewed 11 service user participants (5 randomised and 6 from the naturalistic group) and 10 staff (6 care coordinators who referred participants to the study and 4 who did not). Four main themes emerged from the service user and staff interviews that helped to explain the impediments to recruitment: preference for a certain type of supported accommodation, rejection of randomisation, complexity of randomisation and value of the trial.

Preference for a Certain Type of Supported Accommodation

Staff interviews revealed a strongly held belief that supported housing and floating outreach offered very different types of support to individuals and they therefore struggled to consider an individual as potentially suitable for either service. Thus, although there was clinical equipoise in the research literature, this was not the case for staff who usually had fixed views on the most appropriate accommodation for each patient. In particular, they stated that service users would be insufficiently supported in floating outreach and might be vulnerable to exploitation or relapse.

> '…when a decision is made to move someone into (…) an independent council flat with floating support, clinically we've already made the decision that you don't think … it's going to be a waste of resources…. Because there's clinical reasons why you'd refer someone to a 9 to 5 [sic – supported housing] project. I'd be slightly worried about medication compliance or maybe slightly worried about safeguarding issues.'
> (Staff: 2998. Referrer. Male)

Staff commonly described the two models as sequentially operating components of a 'step-down model', enabling staff and service users to be confident that the person could manage an independent tenancy before referral to floating outreach.

> '…the structure we've got does work quite well because they are in [supported accommodation provider], they stay with the staff, they are tested in the 24hr [supported housing service], they are tested in the low [floating outreach service], and then off to their own flat. It's not a bad programme really.'
> (Staff: 0020. Referrer. Male)

Whilst some service user participants had a clear preference for either floating outreach or supported housing, others appeared to see advantages and disadvantages for both types, regardless of agreement to randomisation. Service users who expressed a preference for floating outreach felt this model would permit greater autonomy.

> 'I'm [forties] years of age, I'm fed up of being monitored. I'm quite able, I can cook. I can clean. I can look after myself. I can wash my clothes. I can have a bath. I can do everything on my own.'
> (Service user: 5010. Naturalistic. Female)

Some consented to randomisation to increase their chance of moving to their own, permanent tenancy. For others, the preference for floating outreach permitted greater control over residential location since the process of applying for a permanent tenancy in England takes account of the individual's preferred area. Preference was often determined by proximity to friends and family, or avoidance of areas known to have individuals who might exploit them or offer them illicit substances.

> 'I like to be close to my family, you know, my daughter round, you know, my grandchildren, things like that. I thought [borough] or somewhere like that I'd like to live, if it was like that.'
> (Service user: 4014. Naturalistic. Female)

> 'Well I was worried that I would end up in a bad area of town … I might get involved in drugs again.'
> (Service user: 5050. Naturalistic. Male)

In some cases, preference for floating outreach was influenced by family and staff. For others, previous negative experiences in supported housing persuaded them that floating outreach was preferable. Service users who preferred supported housing lacked confidence in managing without staff on-site and expressed concerns about relapse and 'moving backwards' if they were to move to a tenancy with floating outreach support.

> 'I'm not ready for my flat yet, but everyone is saying I'm ready for it, but I'm not ready…. I just want that extra six months to make sure that I'm stable. I don't want to get my flat and become unwell again. It costs the government so much money.'
> (Service user: 2049. Randomised. Male)

Others felt that the lack of available tenancies would mean that they would wait longer for a floating outreach option than supported housing. Avoidance of isolation was also a consideration.

> 'I think supported housing is better for some people … I prefer supported because you're surrounded with people.'
> (Service user: 4014. Naturalistic. Female)

Service user preferences, a lack of availability of independent tenancies leading to delays in individuals moving to floating outreach services, and a perceived lack of staff resources to facilitate service users taking part in the feasibility trial were also cited by staff as impediments to recruitment into the study.

Rejection of Randomisation

The randomisation of accommodation was a major concern for service users and staff with the former suggesting that housing was too important to decide by chance. Staff often reflected that a (perceived) lack of equipoise between supported housing and floating outreach services made random allocation inappropriate.

> 'It's a bit … We're talking about someone's home here, do you know what I mean? It's a base need. It seems like something quite serious to flip a coin about, if you know what I mean?'
> (Service user: 0033. Randomised. Male)

> 'It's a question of a gradual, graduated move. So they are not really equivalent, the more I think about it, [floating outreach] or [supported housing], because there's just more monitoring…'
> (Staff: 0020. Referrer. Male)

> 'So, yes I understand the randomisation process, but I would hate to think that it was to the detriment of the wellbeing of a client in a sense. There must be some clinical judgement based on where that client goes.'
> (Staff: 5010. Referrer. Female)

Specifically, staff suggested that the levels of support and oversight provided by the different support types may be inappropriate to different levels of individual need. Thus, people with high needs may fail to recover, or relapse, if randomised to their own tenancy with floating outreach.

> '…he moved to a step down [from supported housing] within an organisation with floating support. Within two weeks he had a psychotic breakdown, he barricaded himself in the flat. He couldn't cope without the staff. It was a real backward step…'
> (Staff: 0020. Referrer. Male)

Service users also stated that the individual and clinician should have the final say over housing and support arrangements. Similarly, staff were concerned that randomisation negated clinical judgement in these issues and excluded the service user from valuable decision-making processes.

Complexity of Randomisation

Despite providing informed consent for participation at recruitment, a few service users had difficulty in recalling the processes relating to randomisation during the qualitative interviews some months later. Some staff felt that the process of randomisation was too complicated for service users to understand and that this could lead to confusion or disappointment if they were allocated to a service they did not wish to move to. However, staff also struggled with understanding the trial process.

> 'The first time I heard about [the trial] I thought maybe it was a platform to find a way of how our clients can get accommodation easily. That's what I initially thought, but obviously, as you indicated, it's not about them, it's about basically the support they can get once they get that accommodation. Yeah. That's what I thought.'
> (Staff: 0033. Referrer. Male)

Value of a Trial

Despite the many obstacles to recruitment we encountered, all those who participated in the qualitative interviews felt a larger trial would be worthwhile.

> 'It's helpful; you need to find out things about people who are unwell and to better things in the future to come through us who are unwell. I don't mind helping that.'
> (Service user: 2017. Naturalistic [supported housing]. Male)

DISCUSSION

We conducted a feasibility trial to inform whether a future large-scale randomised trial would be possible to compare the effectiveness of two commonly used models of supported accommodation that have been shown to offer similar levels of support (supported housing and floating outreach). We screened over 1,400 potential participants, but recruited only 8 who agreed to randomisation (and 9 who agreed to participate in the naturalistic group). There was a very high level of 'gate keeping' by staff in that many potential participants were not approached as they were deemed by their clinical team to be clinically inappropriate for the study. Of those recruited, few were lost to follow-up but few moved to their allocated accommodation and it took many weeks for the move to happen.

The outcome measures we chose were acceptable and completion rates were high. Our use of a second rater to collect follow-up data for one of our outcome measures by telephone to ensure masking proved feasible. However, the very low recruitment meant it was not possible to use our outcome data to estimate a sample size for a large-scale trial.

Our process evaluation indicated that the main obstacles to recruitment were service user preferences for a certain type of supported accommodation and a deeply ingrained belief amongst staff that individuals needed to graduate through the existing 'step-down' pathway, from supported housing to floating outreach, despite evidence that both have similar levels of staff support. Of note, all six participants who agreed to randomisation and subsequently moved to supported accommodation moved to supported housing, despite three being randomly allocated to move to floating outreach services. For staff, randomisation appeared to compromise their sense of professional judgement. Nevertheless, staff and service users generally felt that a large-scale trial would be valuable.

Our findings highlighted the difficulties of using a randomised trial to compare models of mental health supported accommodation. We made extensive efforts to engage potential referrers and broadened our approach to identify potential participants before the relevant clinicians had started to discuss supported accommodation options with them. However, we failed to convince staff and patients that it was ethical and safe to be recruited to the trial. Availability of supported accommodation places also influenced participation.

Although the evidence to date suggests that clinical equipoise exists between the two types of supported accommodation we included, staff had strong views based on their own experience, which clearly influenced recruitment. Patients also held their own preferences for different supported accommodation services, but these were sometimes also influenced by professionals. Although understandable, this is a major problem that needs to be overcome if we are to evaluate the effectiveness of these services. The history of medicine and medical services has shown time and again that professionals can be mistaken in their views and that clinical opinion is not a good basis on which to plan or provide services. Unfortunately, the 'gate keeping role' exerted by clinical staff currently means that we cannot assess robustly the most effective supported accommodation models for people with severe and complex mental health problems in the English context.

Randomised controlled trials are widely considered to be the evidence 'gold standard'. However, alternatives are clearly needed where trials are not feasible. Well-conducted observational studies have been found to produce similar results when compared to randomised trials addressing similar research questions (30) and may therefore be appropriate in such situations. As part of the larger QuEST research programme, of which this feasibility trial comprised one component, a large, naturalistic, prospective, 30-month cohort study was carried out to assess outcomes for individuals recruited from a nationally representative sample of supported accommodation services. The findings from the cohort study will provide useful insights into the potential value of this type of study design in the field of supported accommodation research.

CONCLUSION

Our feasibility trial identified a lack of acceptance amongst staff and service users of the clinical equipoise of the two models of supported accommodation being compared that resulted in insurmountable obstacles to recruitment. Our results confirmed the logistic difficulties of conducting trials in this field and help to explain the lack of randomised trials identified in systematic reviews (10, 11). Our results do not support investment in a large-scale trial in England at this time.

ETHICS STATEMENT

The study was approved by the Liverpool Central Research Ethics Committee (ref. 15/NW/0252).

AUTHOR CONTRIBUTIONS

HK, SP, MK, SE, PMcC, MA, SC, GL and RMa conceived and designed the study. SD, IH, JK, PMcP, CDL and RMc collected and collated the data, which were analysed by ZZ with supervision from SE. PMcC carried out the health economic analysis. All authors were involved in the interpretation of the data. HK drafted the article, which was reviewed and revised by all authors. All authors approved the final version of the manuscript and agreed their accountability in ensuring that any questions related to the accuracy or integrity of any part of the work were appropriately investigated and resolved.

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ORIGINAL RESEARCH
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Staff Expectations of an Australian Integrated Model of Residential Rehabilitation for People With Severe and Persisting Mental Illness: A Pragmatic Grounded Theory Analysis

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Mental health services increasingly involve peer support workers. Staff expectations of working in these services are important because they frame processes and cultures that develop within services, and influence work satisfaction, staff retention, and consumer experience. We examined staff expectations at two new community-based residential rehabilitation units trialing a staffing model where most staff are employed based on their lived experience of mental illness. Qualitative semi-structured interviews were conducted with ten peer support workers and five clinical staff on commencement at Community Care Units that opened in 2014 and 2015. Staff views covered individual motivations, emerging organizational practices and culture, and the nature and philosophy of recovery and recovery-oriented rehabilitation. Subtle differences were evident in staff understandings of recovery and recovery-oriented rehabilitation. Staff were mostly optimistic about the services' potential but expressed uncertainty about how the professions would work together and practicalities of the new roles. Concerns that staff foreshadowed are consistent with those reported in the literature and can be pre-emptively addressed. Future research on staff experiences will enhance understanding of how staff perceptions of recovery-oriented rehabilitation change over time, and of how these relate to consumer experiences and outcomes.

Keywords: community care unit, implementation, qualitative methods, rehabilitation, peer support, schizophrenia

INTRODUCTION

Community care units (CCUs) intend to deliver community-based recovery-oriented transitional residential mental health rehabilitation, predominantly to those with a severe and persistent mental illness (1, 2). Literature exploring staff experiences of working at these units has suggested ongoing tensions and uncertainty between recovery concepts and rehabilitation practice (3, 4). One way that rehabilitation services have attempted to realize recovery-oriented practice is by incorporating peer support roles into their model of service (2, 5, 6).

Recovery-Oriented Practice

Recovery and recovery-oriented practice are central tenets of mental health policy and services delivery in Australia (7). Recovery concepts have numerous interpretations and can be challenging to implement (8). One definition of recovery is as "a deeply personal, unique process of changing one's attitudes, values, feelings, goals, skills, and/or roles (and) a way of living a satisfying, hopeful, and contributing life even with limitations caused by illness" (9, p. 527 10, p. 12). Kidd et al. (11) have identified the importance of partnerships in delivering recovery-oriented care, while Jacob et al. (12) highlight the value of "self-focused" care for consumers with lived experience of mental illness.

Integrating Peer Support Roles Into Recovery-Oriented Rehabilitation

There has been widespread, albeit incomplete (13), support for the value of integrating peer support roles into mental health service delivery to enhance recovery-oriented practice (2, 10, 14). Developing the peer support workforce and incorporating peer-based interventions into routine care is endorsed in Australian mental health policy (7). A study exploring consumers' expectations of a CCU found favorable expectations of an integrated staffing model with regards to peer workers being "people you can relate to," facilitating the "breaking down (of) traditional barriers," and fostering a more positive and hopeful environment (15, p. 1,656). Yet, establishing a sustainable and meaningfully integrated peer support workforce in routine service delivery is challenging (14) and diverse approaches to involving peers have emerged (2, 5, 10). Understandings of these challenges is limited but improving (**Table 1**).

The aim of the present paper was to analyze qualitative interviews undertaken with staff at two new CCUs trialing a staffing model incorporating peer support about their understandings and expectations of working in recovery-oriented rehabilitation services in an Australian setting.

METHODS

This paper comprises one component of a longitudinal mixed methods comparative evaluation of the equivalence of an integrated peer-support and clinical staffing model for residential mental health rehabilitation; specifically, this paper presents the qualitative analysis of staff understandings and expectations of working in a recovery-oriented rehabilitation service that was trialing an integrated peer-support model, at commencement. The published protocol provides comprehensive methodological detail (25) and reporting of the study's methods and findings follow the Consolidated Criteria for Reporting Qualitative Research (COREQ) guidelines, as applicable (26).

Study Sites

CCUs support people with severe and persisting mental illness to achieve personal recovery goals over a 6–24 month timeframe. Most consumers will have a diagnosis of schizophrenia or a related psychotic disorder (27). This study was undertaken at two new outer-suburban CCUs located within a large public mental health service in Brisbane, Australia. These CCUs were an addition to the existing mental health service array that included acute and sub-acute inpatient care; step-up/down community residential care; community case-management, outpatient drug, and alcohol services and rehabilitation teams.

The CCUs began operation in December 2014 and January 2015 and are trialing a novel integrated staffing model where most staff are employed as peer support workers (PSWs) based on their lived experience of mental illness (2). The aim of this novel staffing model was to combine lived experience and therapeutic lenses to facilitate the collaborative development of effective rehabilitation plans with consumers. The staffing model was not intended to alter the core rehabilitation function of the CCUs. Staffing profile and site characteristics are summarized in **Table 2**.

At a CCU consumers reside in self-contained, independent living units in an apartment complex with 24-hour support provided by a multidisciplinary team who assist them with living skills development and community re-integration. Available therapeutic programs at the study sites include cognitive behavior therapy, cognitive remediation, and social cognitive interventions. The philosophy of care documented in the model of service for the CCUs acknowledges the possibility of recovery and aims to provide recovery-oriented and rehabilitation focused care (2).

TABLE 1 | Facilitators and barriers to implementing peer support roles within mental health services.

Facilitator/barrier	Locus	Implementation impact	Reference
Vulnerabilities and/or care needs of peer support workers	Individual	Undermines	(14, 16, 17)
Professionalism of peer support workforce, including credentialing	Individual	Contested	(14, 17–21)
Role clarity and distinctiveness (including provision of training)	Institutional	Supports	(14, 19–22)
Strategic alignment of peer support with service goals	Institutional	Supports	(22)
Valuing the contribution of peer roles; recognizing their credibility	Individual	Supports	(14, 17, 20, 21)
Discrimination against peer support workers	Individual	Undermines	(23)
Training of non-peer staff (including anti-discrimination training)	Institutional	Supports	(14)
Sufficient numbers of peer roles	Institutional	Supports	(14)
Systematic approach to implementation of new roles, and appropriate resourcing	Institutional	Supports	(20, 21)
Shared expectations	Relational	Supports	(22)
Boundary issues, including dual (personal-professional) relationships	Relational	Undermines	(18, 19)
Role conflict between consumer and non-consumer providers	Relational	Undermines	(18, 19)
Strong adherence to medical model	Individual/Institutional	Undermines	(24)

TABLE 2 | Characteristics of study sites.

		Site 1	Site 2
Staffing	Total FTE staff	24.5	18.4
	Total FTE peer-support staff	16	10.4
	Total FTE clinical staff	7.5	7
	Peer support: clinical staff ratio	2.13	1.49
	Staff: consumer ratio	1.2	1.2
Physical environment	Maximum occupancy (consumers)	20	16
	Number of self-contained independent living units	20	14
	Number of dual-occupancy independent living units	0	1
Philosophy of care	Recovery-oriented	Yes	
	Strengths-based	Yes	
	Designated rehabilitation focus	Yes	
	Voluntary engagement in rehabilitation^	Yes	
	Individualized care planning	Yes	
	Transitional support	Yes	
Available treatment and support	Individual psychotherapy support cognitive behavior therapy	Yes	
	Living skills support and development	Yes	
	Structured leisure and physical activities	Yes	
	Evidence-based therapeutic group programs	Yes	

^Consumers subject to involuntary treatment orders are accepted on the basis of voluntary consent and participation

Residential support is transitional and strengths-based, aiming to facilitate self-determination through individualized care planning and voluntary engagement in rehabilitation activities of relevance to consumers' goals (2).

Sample and Data Collection

Ethical clearance was granted by the Metro South Human Research Ethics Committee (HREC/14/QPAH/62). All staff were approached at the commencement of operation at the respective site to provide voluntary informed consent to participate. Convenience sampling was used to allocate the order of participation, with interviews being prioritized based on the order in which consent was provided and availability at interview times. Sampling continued until it was deemed that thematic saturation was reached. Interviews were completed between December 2014 and March 2015; all occurred within the first 6 weeks of commencement of operation at the respective site. Semi-structured interviews were completed by an independent interviewer (EN). Interviewer independence aimed to support an open and candid discussion.

The interview schedule explored three topics: how staff thought the experience would compare to previous mental health settings where they had worked; expectations of the CCU; and why they had chosen to work there. To avoid leading participants to discuss recovery concepts, the interviewer was instructed not to use the term "recovery" unless it was introduced by the interviewee. If participants used the term "recovery," the interviewer followed up with a prompt to ascertain their meaning of the term. In this way, the pertinence of the concept and how its meaning may vary among staff was explored. Interviews were audio-recorded and transcribed verbatim. Transcripts were returned to staff for review and approval. De-identified transcripts were uploaded to NVivo11 for analysis (28).

Analysis

A pragmatic grounded theory approach was taken, described in full elsewhere (25, 29). Data collection, analysis, and theorizing occurred concurrently (30). After three interviews at each site, the research team considered the emerging themes, coding framework, adequacy of the interview schedule, and estimated the sample size likely to achieve thematic saturation.

SP developed and applied an initial coding framework to the data, which CM refined and revised. The team then explored limitations in the coding and the theory's grounding in the data. A comprehensive appraisal of prominent and subordinate content and themes was undertaken, with a view to facilitating future comparison of staff expectations and experiences in the setting. Attention was paid to exploring systematic differences—between sites and between clinical and PSW roles. Before finalizing results, all current CCU staff were invited to listen to, and give feedback on, a presentation of preliminary findings. Twenty-two current CCU staff (9 PSWs and 13 clinical staff) elected to attend the feedback session, which provided a means of validating and refining findings, and for group reflection on the implications of these. No major discrepancies arose between authors' and staff interpretations, and staff feedback was incorporated into the final analysis.

RESULTS

Sample Characteristics

Thematic saturation was achieved following interviews with 15 staff members. Ten were PSWs and five were clinical staff (nursing, social work, and occupational therapy). The sample comprised approximately one-third of the staff commencing (N = 46) and was broadly representative of the staffing profile, where PSWs comprise 64% of full-time equivalent roles (25). Ten interviewees were female, two interviewees had previous experience working within a CCU (one PSW and one clinical staff), five PSWs, and three clinical staff had previous experience delivering mental health support in the non-government sector. The mean interview duration was 34 min (median = 36, SD = 6.6 minutes). Two staff elected to edit their transcripts prior to analysis, both redacting and providing additional information. No major content or thematic differences were identified, either across sites or staffing roles, so data were analyzed together.

Conceptual Model

Figure 1 visually depicts the conceptual model that encapsulates the study's findings. Topics, themes, and sub-themes within this model are described, elaborated, and analyzed, with representative extracts, in the subsequent sections.

Perspectives on the Model of Service

What Recovery Means

The term "recovery" was mentioned in 12 out of 15 transcripts. Six staff provided an explicit or in-depth discussion of the concept (**Table 3**). Other participants referenced related concepts as part of the broader discussion, and process based and individualistic accounts of recovery predominated. Staff expressed the idea that

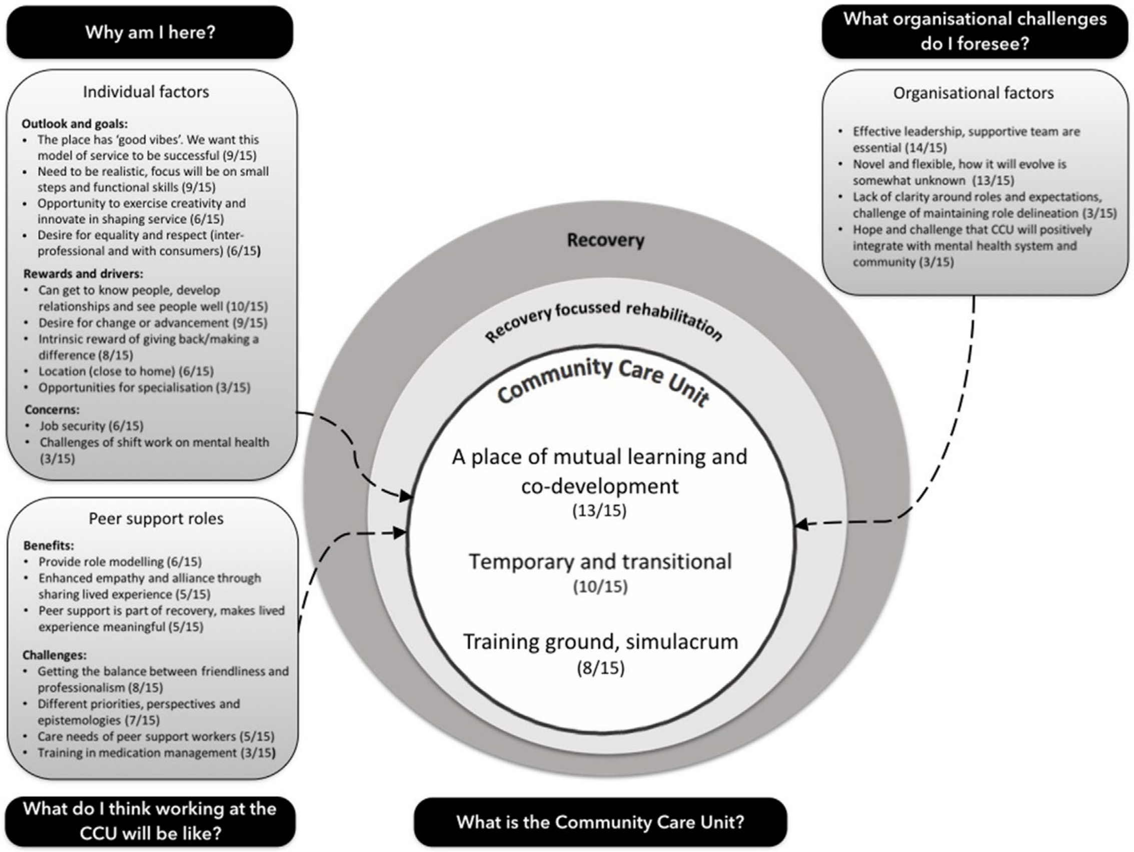

FIGURE 1 | Conceptual model arising from qualitative interviews of staff expectations.

TABLE 3 | Transcript extracts relating to staff concepts of "recovery".

Recovery is…
"A journey" [INTSTA076-PEER]
"A personal journey" [INTSTA061-PEER]
"Individualized to the person" [INTSTA004-CLIN]
"About living a life that's meaningful to you" [INTSTA076-PEER]
"Where they want to be at not to where I think they, you know, should be at." [INTSTA081-PEER]
"Learning how to better manage, with their symptoms and then in everyday life as well" [INTSTA053-CLIN]
"Actively [living] with [a] mental health problem in a way that […] enhances […] quality of life." [INTSTA045-CLIN]

recovery is a journey ("journey" appeared in nine transcripts). Respect for individuality and the importance of person-centered care were also prominent, appearing in 10 transcripts. Conversely, the concept of "meaning" (for example, the importance of building a meaningful life) was infrequently discussed, with the word "meaningful" itself being used in the context of recovery in four cases. Similarly, clinical concepts of recovery were infrequently referenced; two clinical staff described recovery in the context of managing mental illness or its symptoms. Only three peer staff mentioned the term "symptoms": one in the context of their own recovery; one in the context of describing the management of symptoms as one kind of recovery; and one who described such a focus as an old idea that had been superseded by holistic and non-medicalized notions of recovery. Notions of recovery as a perpetual and transformational cycle were alluded to by two staff, and one staff member alluded to recovery involving re-integration within the community.

What Recovery-Oriented Rehabilitation Means

Table 4 summarizes sub-themes regarding what recovery-oriented rehabilitation means. The predominant sub-theme in accounts of recovery-oriented rehabilitation was that of empowering residents to control their own recovery and develop self-reliance (9/15). Consistent with staff understandings of recovery, recovery-oriented rehabilitation was viewed as enabling residents to make choices and set their own goals. This was linked to the notion that the CCU provided a 'safe-space' and created opportunities for residents to take risks and make mistakes:

> [P]eople need to be able to make mistakes and […] make that choice […] then when they do make the appropriate choices for themselves they're the ones that have made them and they're the ones that have owned it. [INTSTA050-PEER]

Some staff expected that a key part of their roles would be helping residents develop life skills (6/15), including interpersonal skills

TABLE 4 | Staff concepts of "recovery-oriented rehabilitation".

Recovery-oriented rehabilitation means…	Representative transcript extracts
Empowering residents in controlling their recovery and developing self-reliance (9/15)	[W]e'd go to them and go, 'so what do you want to do today?', and they'd go, 'well what do you mean?' I'd go 'well, what's your plans?' not like, 'I've got plans for you'; 'you're going to tell me what you want to do'. [INTSTA079-PEER] I really hope that we can look at ways that we can help people do—do things for themselves, you know. [INTSTA076-PEER] [I]t's giving them the, the skills, the resources, the, you know, whatever, you know, coping mechanisms, whatever it is to, you know […]. They've learnt those skills and, um, strategies to do it on their own eventually. [INTSTA081-PEER]
Focusing on small steps and functional skills (mastering the challenges of everyday living) (6/15)	[J]ust breaking things down a lot more into smaller, gradual steps over a longer kind of period I would imagine. [INTSTA045-CLIN] [Working] on like personal skills and getting them more comfortable with dealing with other people and getting them out into the community. […] also a lot of functional […] processes […] your basic budgeting and cooking and things like that to get them to where they need to be um independently. [INTSTA048-PEER]
Participating in residents' recovery journey (6/15)	I'm looking forward to walking beside the residents and […] the community participation. […] I don't want to ever tell them what to do, or be bossy with them—and—and what's going to be the balance between trying to motivate them—and—and still be their peer. [INTSTA016-PEER] I'm really excited to, sort of, become part of their journey in recovery. [INTSTA061-PEER]
Having a strengths and self-esteem focus (4/15)	I think it's working with the consumer where they're at at the present moment and trying to find the strengths that they have inside of them and their abilities to maybe build on that. […] so they have skills and access to additional resources for a future that provides them with a greater sense of self-worth and engagement with their community. [INTSTA045-CLIN]

and living skills like budgeting and cooking. One staff member described that they thought it was important that life at the CCU emulated and provided training for the realities that residents would face when they left:

> What are we going to do, we're going to go to the shops, okay. How are we going to get there? We're not using the car. Because that's the first thing they think, let's get in the car. You think no that's not going to happen in the real world. So, okay, so then just finding out what, what bus—up in town there're so many buses going every different way. [INTSTA079-PEER]

What a CCU is

Staff understood that the CCU is a service designed to realize a recovery philosophy and deliver recovery-oriented rehabilitation. Three sub-themes underpinned this conception, with the CCU being considered: a place of mutual learning and co-development (13/15); a temporary and transitional place (10/15); and a training ground and simulacrum (or "model reality") of community living (8/15).

1. CCU as a place of mutual learning and co-development

The sub-theme of learning was prominent in nearly all staff accounts (13/15). Staff described how they hoped to learn from other staff and residents, and for other staff and residents to learn from them and each other:

> [W]hat I'm hoping for and I suppose that's what I'm working from my individual practice from at the moment is um is that openness to receive constructive criticism and receive kind of direction um and also to be able to reciprocate that with others too. [INTSTA045-CLIN]

For a small number of participants, the ethos of the CCU as a place of learning extended to its role as a place of research and development (2/15), with one staff member identifying that they were 'excited' about the research taking place within the CCU [INTSTA032-CLIN].

2. A temporary and transitional place

Most staff (10/15) identified that the CCU provided a temporary and transitional place—in their own words "a pit stop or a check in point" [INTSTA074-PEER]. Staff articulated the idea that the CCU was a place and point in time that could be transformative for residents, including those who were transitioning from acute and long-term care settings to the community. Consistent with the sub-theme of CCU as a place of learning, one staff member stated that they would know they had made a difference when they saw "residents graduate" [INTSTA022-PEER]. Another staff member highlighted the importance of not fostering dependency [INTSTA076-PEER].

3. A training ground and simulacrum (i.e., model reality)

Elaborating on the idea of the CCU as "a training ground" [INTSTA050-PEER] for community living, over half (8/15) of staff emphasized that the CCU should seek to be a model of the "real world." One staff member described the CCU as:

> [A] community-based setting and environment. It's kind [of] a home-like environment […] I think it helps to build that more human state kind of element to it. Um yeah and makes it a bit more personable rather than kind of clinical. [INTSTA045-CLIN]

This idea—and the positive value attributed to it—that the CCU provides a "natural" setting rather than a contrived hospital or clinical setting, was linked with the idea that it would be easier for staff, particularly PSWs, to build a "natural rapport" [INTSTA004-CLIN] with residents.

> I think that for the residents, it should feel much more natural, whereas rather than feeling that they're constantly being assessed all the time by clinicians, that the peer support are actually doing that, and that the clinicians are listening to the peer support, to pick up those cues of clinical aspects. [INTSTA004-CLIN]

One PSW endorsed the hope that the CCU would function as "this really awesome learning environment that's not—that's really like always really organic […]" [INTSTA016-PEER]. Yet, they also expressed uncertainty as to whether their role would come naturally:

> I'm not exactly sure yet if it's gonna come about in a really natural way or if I'm—I'm gonna have some strategy in my approach. […] and I think um it might be a combination of two that develops over time. [INTSTA016-PEER]

The importance of clinical care, including medication and medication management, was not widely considered (3/15). Those who did discuss it were positive about the prospects of integrating social, psychological, and medical care in one setting:

> I think that's going to—it's going to work well because, um, it sort of means that people are getting the—the sort of support that they need with the, um, the social, the psychological, and the—the medical […] in the one setting. [INTSTA076-PEER]

Individual Level Factors

Outlook and Goals

Staff were generally optimistic about the CCU, describing it as having "positive energy" and "good vibes," and expressing how much they wanted the service to be a success (9/15):

> I like the vision of this place […] the vibe you get off everyone, like just the mood […] like when I walk in I feel immediately better. […] like it's just so positive here […] [INTSTA094-PEER]

For most staff (9/15) this optimism was tempered by realism. Staff expected to encounter challenges, including challenges relating to the side effects of psychoactive medications.

> I think you have to be realistic and understand the impact that medications have and the demotivation […] like the engagement is still going to be an ongoing issue [INTSTA053-CLIN]

In recognizing that challenges lay ahead, staff indicated that they were prepared to "rejoice" in small successes [INTSTA004-CLIN].

Egalitarianism permeated interviews. Some staff expressed a desire for equality and respect in their roles within the new service, both inter-professionally and with residents (6/15).

> I would hate to think that some people might—some residents might get preference because, you know, they're more engaged and personable, easy to like. Whereas you might get someone that's a little bit more difficult with their personality and might be reluctant to engage for whatever reason. [INTSTA053-CLIN]

> I would hate to see, you know, one side [clinical or peer support …] out power the other […]. It needs to be completely sort of equal. [INTSTA076-PEER]

Some staff (6/15) identified that working in a new service allowed for flexibility in how the services would evolve. Some indicated that they were looking forward to the opportunity to exercise creativity and innovatively shape the service or identified that they had no expectations and would 'go with the flow' [INTSTA081-PEER]. Others were wary about what might transpire, for example, that the CCU risked becoming an accommodation service [INTSTA053-CLIN].

Rewards and Drivers

Some staff identified a variety of intrinsic and pragmatic rewards and drivers associated with working at the CCU and hoped to forge different, stronger, and more equitable relationships with residents (6/15). One staff member described that they thought it a "privilege" [INSTA032-CLIN] to participate in a resident's recovery. Most staff looked forward to the opportunity to get to know residents, to develop relationships and, crucially, to see people well (10/15).

> In the inpatient unit, you know, they're going through really quickly […] they're acutely unwell and so you're just trying to get the, through that bad phase […]. And then, you know, the next one comes through. […] [Y]ou didn't see […] what could be. [INTSTA079-PEER]

Most staff wanted to make a positive difference (8/15), and in one case a PSW described their role as "giving back" to the health system that had helped them.

> I felt as if, yeah, I'm in a position with my health where I can help people. […] not only giving back to the community and the consumers, like helping them, sort of giving back to the services, like Queensland Health, from when I went into the public mental health place [INTSTA094-PEER]

Pragmatic drivers included a desire for vocational change or advancement (9/15), the location of the new service (i.e., being closer to home) (6/15), and opportunities the CCU offered for role specialization (3/15).

Concerns

Two personal level concerns were voiced by staff: job security (6/15) (PSWs were employed on 24-month fixed term contracts); and the challenges of shift work and its possible negative impacts on mental health (3/15).

Organizational Factors

Nearly all (13/15) staff spoke about the novelty of the CCU model and its capacity to evolve in unforeseen ways. There was nearly unanimous belief as to the importance of effective leadership and a supportive team environment to the successful functioning of the CCU (14/15). Staff wondered how the multidisciplinary team would come together, recognizing this as a collective responsibility; they hoped a cohesive team would emerge over time.

> [I'm] hoping that this team comes together. That there's not going to be divides. […] whether it's various disciplines *versus* various disciplines, or clinical *versus* non-clinical, or whatever, I'm wary that there can be divides form from time to time and I'm just—I'm just hopeful that doesn't happen here. [INTSTA032-CLIN]

Three staff (3/15) discussed a lack of clarity around roles and expectations or that they thought it would be challenging to maintain role delineation overtime.

> […] I know in some of these environments, like it can be really hard to distinguish […]. So I think letting everyone have a voice but knowing—everyone knowing what their exact role is 'cause I think that can be really blurred a little bit. [INTSTA048-PEER]

Three staff (3/15) expressed the hope that the CCU would integrate with, and be viewed positively by, the mental health services sector and the broader community.

> I want it [the CCU] to be seen as a positive thing within the community and the mental health community and, um, yeah that's the goal anyway [INTSTA053-CLIN]

Peer Support Roles

Benefits

Having PSWs within the service was described by some staff as an opportunity for clinical staff and PSWs to role model effective relationships (6/15).

> Yeah definitely that you don't have the, such a power imbalance then and they're not being given therapy as such from peer workers. It—it's almost like a model of the yeah just a healthy relationship, everyday relationship. [INTSTA050-PEER]

In particular, some staff viewed that sharing lived experience was a means to facilitate greater empathy and alliance (5/15).

> I think the motivation of the staff here, ah—I won't say better, but I think it would be different, because we can have that lived experience, that people will be able to ah, empathise and sympathise and—and be able to say to our consumer, this is my story and I was here […] and I think that hope that that can give to consumers will be ah, beneficial here [INTSTA004-CLIN]

Some staff identified that PSW roles afforded an opportunity for those with lived experience of mental illness to view this as a strength and a valued tool, rather than a hindrance to employment. Some also saw it as part of their recovery and that it contributed to making their journey meaningful (5/15).

> […] like in that moment that I read the job description, um my past sort of made sense and didn't feel like I'd just been wasting my time. It felt like I'd been doing infield work. [INTSTA016-PEER]

Anticipated Challenges Associated With the Integration of Peer Support Roles

Several potential challenges of PSW roles were identified. Chief among these was the expected challenge of achieving a balance between friendliness and professionalism (8/15). Some staff foresaw difficulties if boundaries between "professional" and "familiar" relationships were crossed.

> […] some of the peer support there were saying, you know, how much, um, personal information should you really divulge, because they have never worked in this role before. And you know, we were trying to explain […] don't want to burden your patient with your problems, so whatever you do, you know, there's a fine line between that, you know. So, don't have them counselling you—like you've got to [be] helping them. [INTSTA079-PEER]

> [T]hat we do have policies and procedures, so that they don't become too friendly with the consumer in a—in a boundary issue way. Ah, so for example, if someone's smoking in their unit, I want them to tell me, because it is breaking one of the rules. I don't want them to think that was going to affect their relationship with the consumer. [INTSTA004-CLIN]

As described earlier, the idea of the CCU as a place of learning—including across disciplines and perspectives—was described as a key advantage of the CCU, and something that staff looked forward to. However, successful integration of these perspectives and practices was also described by some as a challenge for the service to manage (7/15), particularly with respect to differences that might exist between peer and non-peer support roles.

> So I think that that barrier will be broken here, ah and I did notice that even on the first week the clinicians wanted to set up their computers, whereas the peer support staff wanted to meet the consumers, and that was like, you kind of look and see which was the priority for people, ah and that clinicians had to really be pulled away from—you don't need to set up your desk. You know, we want to talk about the consumers. [INTSTA004-CLIN]

Some explicitly foreshadowed difficulties if accepted practices or paradigms were questioned by PSWs, including where those differences reflected disciplinary differences.

> Um I guess my big concerns were when it does come time to question things, about having to challenge a little bit, how that's going to be received. Um so that that will be interesting. [INTSTA050-PEER]

Staff identified that they were unsure about whether the care needs of PSWs would place an additional burden on non-peer staff or risk safe and reliable care (5/15).

> The only […] factor that I'd be a bit wary about is uh I suppose the reviewing the risks as well, like after hours. Um how we support our peer support workers if somebody does become acutely unwell, how we support them in that process. [INTSTA045-CLIN]

PSWs identified only one specific need for upskilling, medications management (3/15).

DISCUSSION

Discourses of Recovery and Recovery-Oriented Practice

Staff expectations were broadly consistent with the model of service, in terms of their conceptions of recovery and recovery-oriented rehabilitation, although a discussion of medical elements of recovery was relatively uncommon (2). Staff discourses also aligned with the literature on recovery (8, 10, 31, 32). Staff emphasized process-based and individualistic elements of recovery. The ideas that recovery is a personal journey and the importance of fostering empowerment and consumer centered care emerged strongly. References to recovery as a process of individual meaning-making and clinical recovery were uncommon, and the concept of "service-defined recovery" did not emerge (32). As emphasized elsewhere in the recovery literature (33, 34), staff considered that opportunities to facilitate positive risk taking were relevant to fostering empowerment and self-esteem for consumers to assist them in their recovery journey.

Staff expectations aligned with the literature in that they emphasized the importance of focusing on building partnerships and the (consumer) self in recovery-oriented practice (11, 12). Staff also displayed an awareness of challenges that can emerge (3, 4). The prominence of learning and the conceptualization of the CCU as a training ground and simulacrum (or model reality) appear to be somewhat unique with respect to existing literature (11, 12).

The overall understanding and expectations of peer and clinical staff at commencement at a CCU are broadly consistent with those of the consumers entering these services (15, 29). Both consumers and staff focus on recovery as a process, and expected the service to be transitional in nature and to increase consumer independence through skills development. Difference was noted in that, while consumer narratives placed emphasis on the opportunity for personal "transformation," staff emphasized the role of the CCU as a training ground. This may reflect differences in perspectives between the personal nature of the desired change for consumers in contrast to staff conceptions of their role in facilitating such a change. It is a question for future research whether discourse alignment is maintained over time and contributes positively to achieving therapeutic alliance or greater engagement and outcomes for consumers.

At a structural level, PSW roles were viewed as providing an opportunity for a positive reframing of mental illness, as a vocational strength rather than weakness. This consequence of PSW roles in facilitating positive reframings of mental illness highlights additional benefits to these roles in supporting recovery-oriented practice.

Identification of Implementation "Success" Factors

Staff identified several known success and risk factors for the implementation of PSW roles within mental health services. The overall coherence in views on recovery and recovery-oriented practice between peer and clinical staff indicates a key support factor for the implementation of PSW roles under the integrated staffing model (22, 35, 36). Staff expressed a high degree of goodwill toward the integrated staffing model, were positively disposed to PSW roles and hoped this model would be successful (14, 17, 20, 21).

Identification of Implementation "Risk" Factors

Questions of power and equality infused many aspects of staff discourses about how the CCU would evolve. Staff foreshadowed potential challenges to the successful implementation of an integrated model, including the possibility of boundary issues and role conflict (18, 19) as well as the challenge of maintaining role delineation between PSW and clinical roles overtime. While these challenges have been highlighted as implementation "risk factors," staff also highlighted benefits that could be derived from breaking down barriers and challenging perspectives. This raises questions for future research as to whether awareness of both the benefits and risks of balancing multiple perspectives can serve to prevent conflicts, as well as power imbalances, from developing.

Some staff expressed concerns regarding the vulnerabilities and care needs of PSWs (14, 16, 17). Concerns were raised over job insecurity and poor team dynamics as risks that could undermine goodwill toward either colleagues or residents. The extent to which the temporary nature of the PSW contracts, in comparison to the permanent employment of the clinical staff, impacts the team dynamic will need to be considered in the follow-up interviews. Finally, a few staff identified a lack of role clarity and distinctiveness as possible risks (14, 19–22).

One notable omission in staff discourses was the issue of professionalizing and credentialing the PSW workforce. While professionalizing (and credentialing) PSW roles is a contested issue in the literature, this matter appeared to be a non-issue among those interviewed (14, 17–21). Whether this finding reflects increasing acceptance of the value of PSW by mental health workers or the enthusiasm associated with the commencement of a new service will be explored in planned future research.

Implications for Practice

Optimism about the integrated staffing model for residential rehabilitation supports the acceptability of this configuration to both clinical and PSWs. It suggests that resistance from clinical staff to the introduction of PSW roles has diminished over time (22) and that PSW roles are increasingly valued. This bodes well for future efforts to increase the level of peer involvement in CCUs and similar services (5, 6).

The extent to which these novel configurations can improve service experiences and outcomes for consumers needs further evaluation. Job security concerns for PSWs remain a challenge, particularly where there is an ongoing debate about the value of PSWs in the empirical literature (13, 37, 38). PSWs at these CCUs were initially employed on a temporary basis as the model was novel and required evaluation, however the positions have since been made permanent. Improved understanding of PSW roles within clinically operated services will enhance employer and service planning confidence in the future.

Strengths and Limitations

The key strength of this study is that it provides insight into what motivates staff to find work in such services at the beginning of their engagement, and the opportunities and challenges that they foreshadow. However, the overall level of optimism expressed by participants may be due to respondent bias, particularly as staff were new employees and likely desirous to create a good first impression. Alternatively, this positivity may indicate the optimism and excitement about the model of service that compelled their (successful) application for their roles. Hope for a positive experience was tempered by explicit recognition of possible difficulties that lie ahead, indicating critical and honest consideration of the potential realities of the roles.

The CCU was a new service trialing an integrated staffing model that was being added to the existing service landscape. Consequently, inertia or resistance to change among staff at commencement would be unlikely. However, because of this, results may not be generalizable to established services. Future evaluations should examine whether this optimism, tempered by awareness and reflexivity, predicts retention and job satisfaction or, alternatively, whether initial hope and optimism is a risk factor for subsequent disillusionment.

The sampling approach was non-random and approximately one-third of staff working at the services were interviewed, potentially restricting generalizability of findings. However, feedback sessions that included additional staff to those interviewed did not highlight differences or disagreements with the material that had been collected.

CONCLUSION

Staff at the CCUs conveyed goodwill and optimism about the integrated staffing model on commencement. This enthusiasm was tempered by realism regarding the potential challenges of recovery-oriented rehabilitation and of integrating peer roles with clinical care. This study supports the acceptability of the integrated staffing model for residential rehabilitation to staff commencing at a CCU, and that PSW roles are valued by both clinicians and people working in lived experience roles. Planned future research to elicit staff experiences, 12–18 months after commencement, will add further insight into the implementation of this model of care, whether, and if so how, views on recovery-oriented rehabilitation change, whether staff priorities and outlooks change, what issues manifest over time, and whether, and if so how, staff attitudes relate to consumer experiences and outcomes.

DATA AVAILABILITY

The datasets for this study will not be made publicly available because datasets are bound by the confidentiality principles outlined in the ethics approval. Any request for access to the full dataset associated with this project would require further review and approval from the relevant ethics committee.

ETHICS STATEMENT

Ethical clearance was granted by the Metro South Human Research Ethics Committee (HREC/14/QPAH/62).

AUTHOR CONTRIBUTIONS

CM contributed to the study design and the training of the interviewer (EN), provided substantial contribution to the analysis, and drafted the initial manuscript. SP contributed to the study design, coordination of the research team, and recruitment at study sites. SP also provided minor contribution to the analysis and reviewed iterative manuscript drafts. EN contributed to the completion of interviews, provided minor contribution to the analysis, and reviewed the initial manuscript draft. FD contributed to the study design, provided minor contribution to analysis, and reviewed iterative manuscript drafts.

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Prevention and Recovery Care Services in Australia: Describing the Role and Function of Sub-Acute Recovery-Based Residential Mental Health Services in Victoria

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Background: Prevention and Recovery Care (PARC) services are relatively new sub-acute residential services that have supported people with mental ill-health in Victoria since 2003. Operated from a partnership model between non-governmental agencies and clinical mental health services, PARC services integrate intensive recovery-focused psychosocial input with clinical mental health care.

Aim: To describe and contrast the 19 PARC services operating in Victoria at the time of the study, in terms of structures and function, resources, and content and quality of care.

Method: Nineteen participants, one representing each PARC, completed two surveys: the first, a purpose-designed survey relating to the government guidelines for PARC services, and the second, the Quality Indicator for Rehabilitative Care.

Results: Descriptive analyses highlighted that PARC services have operated in inner-city, urban, and regional areas of Victoria, from between 1 and 14 years. Participants reported that a recovery approach was at the core of service delivery, with a vast array of group and individual programs on offer. Across the state, there was variation in the quality of services according to the Quality Indicator for Rehabilitative Care domains.

Conclusions: This study has identified that there is variation in the structure and function, resourcing, and content and quality of care offered across Victoria's PARC services even though, in the main, they are guided by government guidelines. Hence it appears that the services adapt to local needs and changes in service systems occurring over time. The findings indicate emerging evidence that PARCs are providing recovery-oriented services, which offer consumers autonomy and social inclusion, and therefore likely enable a positive consumer experience. The range of individual and group programs is in

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line with the Victorian guidelines, offering practical assistance, therapeutic activities, and socialization opportunities consistent with consumer preferences. Further research into implementation processes and their impacts on quality of care is warranted concerning this and similar service models.

Keywords: sub-acute, community-based residential environment, mental health, implementation, service delivery, built environment

INTRODUCTION

Acute inpatient mental health care has been criticized for being expensive, restrictive, coercive, and unpopular with service users (1), and community-based residential alternatives have developed as a result. Acute inpatient care typically provides more intensive support to people experiencing a mental health crisis and/or a significant exacerbation of the symptoms of their mental illness requiring immediate treatment, although some community-based crisis services also exist for the same purpose. Slade et al. (2) compared inpatient and community-based alternatives, such as residential crisis services, and found no difference in outcomes but higher costs for community-based alternatives due to longer stays. Sweeney et al. (3) found that service users preferred crisis houses (a UK alternative for people who do not require involuntary hospital admission), due to stronger therapeutic relationships with staff, greater informal peer support, and fewer negative events experienced, for example, verbal abuse, forced medication, and being ignored by staff.

Aside from the aforementioned community-based crisis services, most community-based residential services are bed-based services that focus on improving the independence and community functioning of people with mental disorders (4). It is common to classify these services into sub-acute and non-acute services. One major difference between the residential service types is the length of stay. Non-acute services include community care units (CCUs) and residential rehabilitation services, which generally provide support for between 6 and 24 months (4). Operating since 2003, Prevention and Recovery Care (PARC) services are now a feature in most areas in Victoria, offering short-term support spanning from a few days to 4 weeks. PARC services are residential sub-acute services that support people with mental ill-health to either avoid an inpatient hospital admission (step-up) or leave hospital early (step-down). PARC services are now being implemented elsewhere in the country, with the aim of improving mental health outcomes and preventing hospital admissions for people who are acutely unwell (5). They have a strong emphasis on integrating clinical mental health care with intensive recovery-focused psychosocial input.

PARC services are considered part of the clinical system, that is, area mental health services (AMHSs) (state-funded specialist public mental health services, commonly described as clinical services). Elements of the PARC model of care are sub-contracted by the clinical service to a Mental Health Community Support Service (MHCSS) (non-government organization, NGO). This arrangement means the model of care is variable between PARCs, as they typically reflect the goals and needs of the local area as they are understood through the prism of the clinical provider. In practice, however, the relationship between the clinical service and MHCSS is collaborative and based on a shared commitment to the delivery of recovery-oriented sub-acute care. They are staffed by employees of both service types. Victoria's adult sub-acute PARC services enable people to be admitted voluntarily, with or without a community treatment order, for up to 28 days. PARC services usually have a maximum of 10 residents, offering a homelike environment with single rooms in a stand-alone building. Thus, they are at least half the size of Victoria's busy acute inpatient units that tend to be wards integrated into general hospitals or large health services. They contrast with other residential rehabilitation services because of the much shorter length of stay and emphasis on offering a residential support option as either a "step-up" from the community or a "step-down" from the inpatient unit. They are generally described as providing "sub-acute" care focused less on immediate treatment and more on recovery and social inclusion outcomes.

Early Research Evidence About Alternatives to Admission

Since 2003, adult PARCs have gradually become firmly embedded in the area mental health service system in Victoria, and other Australian states have begun to adopt them. Despite considerable financial commitment and plans for expansion, the evidence base underpinning PARCs is very limited, largely relying on small, localized evaluations that, with rare exceptions (6), have not involved comparison groups, considered longer-term outcomes, or been published in the peer-reviewed literature (7–11). It remains unclear whether PARC services reduce pressure on acute beds in inpatient services (12), with only limited evidence available (13). A recent review of controlled studies concluded that current research is insufficient to provide convincing evidence about the effectiveness of residential alternatives to standard acute inpatient mental health services (14). This has led to calls for rigorous research to elucidate the models under which these services operate and their impact on stakeholders (9).

Even so, evaluations of Victorian PARC services and their equivalents in other Australian states do suggest they are well regarded by consumers. We use the term "consumer," as it is common to move away from the language of "patient" when referring to people in such residential alternative services. In the Australian context of this study, we refer to "consumers," akin to "service users." In particular, consumers value services that are staffed by supportive and caring workers and offer practical assistance, therapeutic activities, and socialization opportunities (8, 11, 15). They have also been shown to be associated with improvements on recovery-related indicators such as role functioning (11, 15) and symptom-based measures (11). The Victorian Department of Health (now the Department of Health and Human Services) PARC service guidelines were developed in 2010 with the goal of providing operational guidance regarding service planning and delivery (16). The government guidelines provide a framework for collaborative care planning that emphasizes rehabilitation and recovery that is adaptable to local need, enabling service provision that matches individual presentations and PARC resources. **Box 1** highlights the core components of the guidelines, including key service principles, service models, service operations, and performance monitoring. The current study is one component of a state-wide evaluation of PARC services. A series of interrelated studies have been designed with the principal aim of evaluating the appropriateness, effectiveness, and efficiency of adult PARC services in Victoria to address the gaps in knowledge regarding sub-acute community mental health residential services. This paper aims to describe and contrast the current PARC services operating in Victoria, in terms of structures and function, resources, and content and quality of care.

BOX 1 | Summary of Prevention and Recovery Care Service guidelines.

Key service principles

1. Collaboration
2. Least possible restrictive practices
3. Respect and responding to diversity
4. Consumer and carer participation
5. Privacy and confidentiality

Service model

- Active clinical community intervention and treatment
- Appropriate clinical treatment and support
- Appropriate range of types and levels of psychosocial and other support
- Active consumer involvement in their own treatment; maintaining and engaging consumers' natural supports
- Client eligibility criteria, for example, consumers who are 16–64 years of age
- PARC services fit in the continuum of care between acute inpatient and intensive community support in the consumer's own home; consideration should be given to the following
    - Entry processes
    - Care planning and implementation
    - Length of stay
    - Transfer of care/discharge planning
- Relationships
    - Links with clinical mental health services
    - Links with the community mental health support service
    - Links with primary and community-based services

Governance: appropriate agreements to be developed by the clinical service and the mental health community support service

Service operations

- Service planning and development consultation with a range of key stakeholders
- Staffing model and workforce development, for example, an appropriate mix of clinical and non-government organization (NGO) staff
- Daytime operations
- Nighttime operations
- Medication administration
- Incident management
- Clinical mental health and community mental health support service communication mechanisms
- Adherence to service standards and quality related to the Mental Health Act
- Complaints
- Additional policies and procedures, for example, medico-legal issues or sexual safety
- Catchment areas
- Facilities, location, and living environment

Performance monitoring

- Use of state-wide data collection and reporting systems
- Locally relevant measures

Summarized From the Adult PARC Services Framework and Operational Guidelines (16)

METHOD

Study Setting

As of January 2016, there were 19 adult PARC services offering approximately 184 beds in Victoria. By 2019, this increased to 20, with now only one AMHS in Victoria operating without a PARC service. These 19 PARC services open at the time this study was undertaken are sub-acute services, including a women's-only service, that offer a 28-day maximum stay. The 19 PARC services included in this project include 12 PARC services in suburban areas, 4 in regional areas, and 3 in inner-city areas. Generally, the day-to-day management of the unit and the provision of psychosocial interventions and support is the responsibility of the MHCSS. The clinical services provide clinical governance and treatment and the assessment and management of risk issues in relation to individual consumers. The clinical services generally make decisions regarding entry and exit from the service in consultation with the MHCSS. The two services work in close partnership to provide an integrated and holistic approach to care.

Participants

Each of the adult PARC services nominated a manager or other appropriately knowledgeable senior staff member to participate in the study (n = 19 participants).

Data Sources

Two data sources were utilized:

1. Data on the PARC services were collected using a pro forma designed by the research team to reflect the alignment of services provided by each PARC service with the government guidelines and to provide details about the types of services offered (16). It included 37 quantitative items and open-ended items that generated qualitative data, and took approximately 20 min to complete. The following topics were covered: governance and operation; facilities, location, and living environment; service delivery; staff; key performance indicators (KPIs); and performance monitoring processes. **Table 1** provides examples of questions covering these topics.
2. The Quality Indicator for Rehabilitative Care (QuIRC) is an internationally validated tool designed for use in longer-term

TABLE 1 | Example questions from the questionnaire concerning the alignment of services provided by each Prevention and Recovery Care (PARC) service with the government guidelines.

Topic	Example question	Response options
PARC service governance and operational information	Is there an operational collaboration agreement between the Adult Mental Health Service (AMHS) and the Mental Health Community Support Service (MHCSS)?	Yes/no
	What is the leadership structure in your PARC? Please comment on both the MHCSS leadership and AMHS leadership, and who has overall responsibility.	Open ended
PARC service facilities, location, and living environment	Which of the following best describes the type of location of the PARC service?	Co-location with MHCSS or community care unit (CCU)/single facility in the community/single facility on hospital grounds/cluster of closely linked facilities in the community/other (please specify)
Service delivery	Is there a particular model of practice that guides your PARC service delivery? If yes, please describe.	Yes/no and free text box
	Please describe the group programs that are offered to consumers.	Open ended
Staff	Please provide details about the MHCSS staff working at the PARC; number of staff and total equivalent full-time.	Open ended
Key performance indicators and performance monitoring	What locally relevant outcome measures do you use? Include consumer and carer outcome measures, quality improvement measures, exit and satisfaction surveys, or any other relevant measures.	Open ended

inpatient and community-based mental health residential facilities to assess the quality of care (17, 18). The QuIRC was considered suitable for this study because it is a validated instrument designed to measure the quality of care in a residential mental health setting. However, given that PARC services aim for a short length of stay, some adaptations were made (e.g., items referring to care provided over a 12-month period were changed to refer to a 1-month period). The QuIRC was designed for completion by the service manager and took around 1 h. It comprises 145 items that provide a combination of descriptive data and data that are collated into percentage scores on seven domains of care, with higher scores reflecting better quality on that domain. **Table 2** provides a brief description of the seven QuIRC domains. Because of the large number of items, it is not feasible to include its whole content; however, **Table 3** details the areas the QuIRC covers; see also (18).

Data Collection

The research team convened a forum in Melbourne in March 2017 for the senior staff participants to complete the Victorian PARC service mapping questionnaire and the QuIRC. The manager of each PARC service was sent a letter from the project team explaining the project and the required information to complete the audit tools at the forum. The nominated staff member was provided with the plain language statement and a consent form prior to the forum.

At the forum, each staff member was provided with an iPad to complete the audit tools, and members of the research team were available to clarify any questions that arose. Two service managers were unable to attend, so a researcher visited them to administer the survey tools within 1 month of the forum.

Ethics approval for this project was granted from the University of Melbourne's Human Research Ethics Committee (project number: 1647880.1).

TABLE 2 | The Quality Indicator for Rehabilitative Care (QuIRC).

Assesses 7 domains of care:	QuIRC 143 items assessing:
• Living (built) environment • Therapeutic environment • Treatments and interventions • Self-management and autonomy • Social interface • Human rights • Recovery-based practice	• Staffing, training, supervision • Built environment/facilities • Evidence-based interventions • Activities (in and outside the service) • Care planning processes • Service user involvement • Family support • Promotion of autonomy and independent living skills • Physical health promotion • Management of challenging behaviors • Complaints processes, confidentiality, access to advocacy and lawyer

Data Analysis

Quantitative data from the Victorian PARC service mapping questionnaire and the QuIRC were analyzed using SPSS Version 22 to generate descriptive statistics. Thematic analysis of qualitative data derived from open-ended questions regarding the types of individual and group programs described in the Victorian PARC service mapping questionnaire was undertaken by four of the authors. Initially, authors JF and LB discussed the qualitative content from the surveys and developed key themes to describe the data. JF then coded all the data under these themes. The themes and coding were then reviewed by JF, LB, CH, and BH, who discussed and negotiated the themes and coding until all parties were in agreement.

RESULTS

The first PARC service was established in Victoria in 2003, and the most recent one opened in 2016. On average, the PARC

TABLE 3 | Description of QuIRC domains.

Domain	Description
Living environment	The built environment and the practical aspects of how the facility is organized and run
Therapeutic environment	The therapeutic culture of the facility, including staffing, training and supervision, staff attitudes to service users
Treatments and interventions	Medical, psychological, and social treatments and interventions, physical health promotion, and the use of seclusion or restraint
Self-management and autonomy	The degree to which the service assists service users to gain/regain skills for living independently
Social interface	The degree to which the service makes links with community resources and engages with service users' families and carers to strengthen their social networks
Human rights	The degree to which service users' legal and civic rights are promoted and how they are involved in decision making about their care; includes data protection, confidentiality and provision of systems for complaints, access to advocacy, and support with voting
Recovery-based practice	Degree to which service users are engaged collaboratively in planning and agreeing to their own care and treatment and in the running/decision making of the service; degree to which staff hold hope for service users to progress in their recovery

services had been operational for 7 years (SD = 7.3). All PARC services were staffed 24 h a day, 3 had a staff member awake and on duty at night, and the remaining 16 had a staff member in the building, sleeping over at night. PARC managers reported that their services had a mean of 10 beds (SD = 1, range 6–10), with a maximum length of stay of 28 days. Three PARC services had day places available, enabling a consumer to attend activities at the PARC during the day only, with two PARC services reporting that day places were used on average once per month.

Victorian PARC Services Survey

Location, Building Type, and Access

The PARC services were located across the state in inner-city (3, 16%), suburban (12, 63%) and regional areas (4, 21%). Most were stand-alone facilities in the community (11, 58%). Others were co-located with MHCSSs or residential CCUs (4, 21%); two managers reported being in a cluster of closely linked facilities in the community, and two reported "other" location arrangements (none of the Victorian PARC services were on hospital grounds). Some PARC services were purpose-built facilities (11, 58%), while others operated from converted buildings (8, 42%). Managers of 10 of the 19 PARC services reported that the street entrance to the PARC was locked, and of these, the consumers of four, and staff of three, services were dependent on staff in the building granting access. This means consumers were free to come and go from the PARC service as they wanted, but for security in the community setting, the front doors were kept locked.

Staff Qualifications and Staffing Mix

Table 4 displays qualifications of workers employed by the MHCSS, including the level of higher education and the details of staff with lived experience of mental health issues. Almost all staff (95%) were educated to graduate level and two-thirds to post-graduate master's level. Most (84%) had a diploma in mental health. About half of the PARC services reported employing a peer worker, and two reported employing a family/carer peer support worker.

The staffing mix of AMHS and MHCSS staff varied between PARC services. Most (17 of the 19 PARC services) had a permanent clinical staff member, and 6 had a system for the rotation of clinical staff (a planned length of time a clinical staff member would be assigned to work at the PARC). However, there was considerable variation in the percentage of time in a 24 h period that the clinical staff member was available (mean 44%, SD 28%, range 8–100%) and how much time in a 24 h period clinical staff were present (mean 32%, SD 20%, range 3–95%). **Table 4** shows the number and equivalent full-time (EFT) staff from the MHCSS, AMHS, and other services, that is, staff employed by outside agencies who work at the PARC.

TABLE 4 | Qualification of PARC staff employed by the MHCSS, staff mix between MHCSS and AMHS.

	Frequency	Percent		
Staff qualifications				
Diploma in mental health	16	84		
Diploma in alcohol and other drugs	10	53		
Diploma in clinical services	1	5		
Bachelor's degree	18	95		
Master's degree or higher	12	63		
Peer worker	11	58		
Consumer consultant	0	0		
Carer consultant	0	0		
Family and carer peer support worker	2	11		
Other (please specify)	5	26		
	N of PARCs	**Mean**	**SD**	**Range**
MHCSS staff				
Number of staff	19	10.4	2.9	4–16
Total equivalent full-time (EFT)	18^	7.3	1.4	4–10
AMHS staff				
Number of staff	19	5.6	3.9	1–15
Total EFT	18	2.6	1.6	1–8
Other staff				
Number of staff	19	0.2	0.5	0–2
Total EFT	19	0.4	1.3	0–4

^*The data for one PARC was entered in error and so was removed from analysis.*

Partnership Approach and Governance

Managers reported on the governance and operational procedures of the PARC services according to specific questions linked to government guidelines. Eighteen of the 19 PARC services had an operational collaboration agreement between the MHCSS and the AMHS, as well as a documented governance structure. Seventeen also had a sub-contract agreement for services to be delivered by the MHCSS. **Table 5** displays the policies each PARC service was expected to utilize according to the government guidelines and indicates the origin of each of the policies for PARC services.

Most PARC services had developed joint policies, particularly in relation to the day-to-day running of the PARC service, such as: guidelines for entry and exit; procedural documents for admission and discharge; and critical incidents. The risk assessment protocols were usually taken directly from the AMHS, whereas the staff education and training policy and the complaints policy were developed more often by the MHCSS.

Service Delivery

All referred to their approach to service delivery in terms of "recovery." The "collaborative recovery model" (19) was the most frequently reported model (5, 26%). Other terms used to describe the approach to service delivery included "client-centered recovery framework," "community recovery model," "Recovery Star," and "Mind's recovery-oriented practice." One PARC service described their service as using a "biopsychosocial model," and two managers reported using the Victorian guidelines to support the approach to service delivery.

Group Programs

PARC service managers were asked the open-ended question, "Please describe the group programs that are offered to consumers." Three managers included in their response that programming for groups was dependent on the needs and preferences of the consumers in the PARC service at the time. The following quote illustrates this point:

> *We have a program whereby we ask the participants daily what types of things they would like to learn about. We then put in place groups that are relevant to the specific mix of participants that are in at the time. We have over the journey seen trends on what people are requesting and have got some resources that are used commonly.*

Another manager elaborated on how the service arranged groups:

> *There is an extensive group plan that is set over two weeks and then rotates. The program is reviewed every six months to include feedback clients have provided either to staff, via the Peer Support Worker, or using the feedback forms at the end of their stay.*

Seventeen participants answered this by listing the array of programs and topics included in the PARC service group programs. Six interrelated and interdependent themes emerged from the data and are described below. **Table 6** shows the number of PARC services delivering groups within each theme and the volume of activities offered under each theme across all PARC services. The six themes describing group programs were:

Recovery and wellness: This theme included recovery groups facilitated by peer workers; the Optimal Health Program (20); spiritual well-being; meditation and relaxation; and wellness planning. All 17 managers reported that their services offered groups under this theme. About half reported that their recovery groups were run by peers, and approximately half reported running relaxation groups.

Activities of daily living (ADLs) and self-management: This theme included the subthemes of self-care, cooking, and budgeting. All service managers reported running groups of various types within this theme, and almost all reported that their services offered a cooking group.

Physical health included nutrition and exercise. Approximately one-third of participants reported offering sport and recreation groups such as gym, swimming, and walking groups.

Psycho-therapeutic interventions represents interventions focused on consumers understanding and discovering strategies

TABLE 5 | Types of policies and where they originate.

Policy	Joint		AMHS		MHCSS		N/A	
	N	Percent	n	Percent	n	Percent	n	Percent
Guidelines for entry and exit	15	78.9	3	15.8			1	5.3
Procedural document for admission and discharge	13	68.4	5	26.3			1	5.3
Risk assessment protocols	7	36.8	12	63.2				
Critical incidents policy	14	73.7	4	21.1	1	5.3		
Staff education and training policy	7	36.8	1	5.3	9	47.4	1	5.3
Complaints policy	9	47.4			9	47.4	1	5.3
Model of staff structure	10	52.6	1	5.3	7	36.8	1	5.3

TABLE 6 | Delivery of groups and activities by theme.

Theme	Number of PARCs delivering, n = 17	Number of activity types offered across all PARCs	
		Total number	Range
Recovery and wellness	17	36	0 – 5
Activities of daily living (ADLs) and self-management	14	27	0 – 4
Physical health	12	19	0 – 3
Psycho-therapeutic interventions	12	17	0 – 3
Therapeutic milieu and group programs	11	23	0 – 3
Social groups	8	11	0 – 3

to ameliorate symptoms of mental ill-health. This theme included mindfulness groups, psychoeducation groups, and sensory groups. Twelve PARC managers reported that their service offered these kinds of groups. Mindfulness groups and psychoeducation groups were the most frequently reported (approximately half and one-third, respectively).

Therapeutic milieu and activities: This theme involved group activities, spanning the following areas: music; art/craft; yoga; dancing; community meetings; men's group; and gardening. Eleven managers reported offering groups that were classified under this theme. Around half reported facilitating art and craft groups, and one-third reported running music groups and/or community meetings.

Social groups were defined as activities in the community supported by the PARC staff, including community connections, such as volunteering at a local animal shelter, and social outings, for example, to have afternoon tea at a local cafe. About half the participants reported facilitating social groups in the community. Each PARC seemed to focus on a particular type of outing, and there was not much commonality on the type of outings across the PARC services.

Individual Programs

All 19 participants provided details about the 1:1 programs offered to consumers. Many mentioned topics that related to the six themes identified for the group programs above, particularly concerning *recovery and wellness; ADLs and self-management;* and *physical health*. In addition, over half the participants reported 1:1 key worker support, and individual recovery planning, goal setting, and safety/wellness planning. Just under half of the services offered psychiatric and medical services, for example, psychiatric review, medication reviews and education, and referrals for counseling or therapy outside the PARC. Just under half of the participants reported that consumers had access to individual sessions based around the Optimal Health Program (20). One-quarter of participants reported that their consumers were offered sessions with a peer support worker and had access to family sessions and support.

Satisfaction and Experience of Service Measures

Exit surveys for consumers were in use in almost all PARC services, and about one-third used exit surveys with carers. Roughly three-quarters reported using clinical outcome tools (such as Health of the Nation Outcome Scales (HoNOS) or Behaviour and Symptom Identification Scale (BASIS-32)), and a minority reported the use of a recovery outcome measure.

Key Performance Indicators

Participants were asked to report KPIs (outlined in the government guidelines) for the previous 6-month period (1 July 2016–31 December 2016). **Table 7** details these. The average length of stay and occupancy rate were variable. Fourteen of the 19 PARC services sometimes included consumers who were subject to a community treatment order (orders under Victorian mental health legislation that can impose compulsory treatment in the community).

QuIRC

Table 8 shows the overall descriptive statistics for each domain, as well as the percentage scores for each PARC service on the seven domains of the QuIRC. Services shown in blue in the body of the table were below the overall mean domain score. In the final column, green indicates the services with the least number of domains (0–2) scoring below the Victorian mean, amber indicates those in the mid-range (3–4), and red indicates those with the most domains (5–6) scoring below the Victorian mean.

Three QuIRC domains had wide variation in scores between PARC services: living environment; social interface; and treatments and interventions. Living environment was, on average, the highest-scoring domain across Victoria, with purpose-built services scoring higher (mean = 78, range 66–92) than those that had been converted (mean = 69, range 58–78). Treatments and interventions was the lowest-scoring domain across Victoria.

PARC service 12 scored highest for five of the seven domains and second highest on one domain. PARC service 4 scored second highest on two domains (self-management and autonomy, and recovery-based practice) and highest on another (human rights), but second lowest on social interface. PARC service 7 and PARC service 13 both scored below the state average on six out of seven domains. No service had the lowest score on more than one domain.

DISCUSSION

This paper provides the first insights into how adult sub-acute PARC services in Victoria operate and the support they deliver. Our data suggest that the majority are being run according to the government guidelines including localized variations (16). All service managers reported operating a partnership model and implementing the required policy and procedure documentation, although there was variation in terms of

TABLE 7 | Manager reports of key performance indicators as set out in the Victorian PARCs guidelines.

	N	Mean	Std. Deviation	Minimum	Maximum
What is the average length of stay in the PARC (in days)?	19	18.05	5.642	10	37
What has been your average occupancy rate? (%)	19	73.11	24.39	8	95
What is the average number of step-up admissions in a month?	19	15.58	21.269	2	70
What is the average number of step-down admissions in a month?	19	12.63	13.937	2	50
What is the average number of consumers on community treatment orders (CTOs) in a month?	19	1.74	1.727	0	6
What is the average number of consumers discharged from their CTO during their admission in a month?	19	0.63	1.165	0	5

TABLE 8 | QuIRC domains by PARC.

PARC	Renovated or purpose-built	Living environment	Therapeutic environment	Self-management and autonomy	Social interface	Human rights	Treatments and interventions	Recovery-based practice	Number of domains below the Victorian average
04	PB	82	61.94	80.62	54.66	82.68	61.41	72.05	3
09	PB	80	62.64	64.94	66.76	73.04	60.12	65.89	4
13	PB	80	61.4	71.59	64.36	59.59	53.57	63.02	6
17	PB	88	56.43	65.36	67.41	70.76	52.58	57.16	5
02	PB	76	63.25	71.14	74.37	71.18	52.49	71.82	2
15	PB	66	63.74	70.53	55.08	70.12	71.75	63.26	5
19	PB	78	60.74	74.88	64.83	70.76	50.75	67.09	3
07	PB	72	60.03	69.83	71.06	69.8	53.01	61.42	6
11	PB	72	60.2	73.77	45.39	64.56	58.9	65.38	5
08	PB	76	73.32	77.08	72.49	68.33	73.96	69.08	1
12	PB	92	73.89	84.97	76.15	80.76	76.2	76.5	0
05	R	68	61.81	68.24	71.42	67.35	56.63	65.05	5
06	R	76	62.69	69.18	71.04	67.01	56.94	58.49	4
14	R	76	64.05	70.5	77.96	68.79	60.98	63.16	4
16	R	58	61.47	69.83	76.39	65.34	72.79	61.81	5
10	R	66	61.45	72.84	64.11	74.35	67.13	67.45	3
18	R	78	59.11	68.61	77.64	69.44	63.88	64.32	4
03	R	70	61.6	75.7	67.19	77.68	74.44	63.42	4
01	R	60	60.92	69.99	73.37	66.82	71.07	60.29	5
	Mean	**74.42**	**62.67**	**72.08**	**67.98**	**70.44**	**62.56**	**65.09**	
	Minimum	**58**	**56.43**	**64.94**	**45.39**	**59.59**	**50.75**	**57.16**	
	Maximum	**92**	**73.89**	**84.97**	**77.96**	**82.68**	**76.2**	**76.5**	
	SD	**8.63**	**4.22**	**4.95**	**8.65**	**5.54**	**8.64**	**4.82**	

which service took the lead in policy development, reflecting local partnership arrangements, which are reflected in the sub-contracting arrangements developed by each AMHS. Further, there was variation between services in terms of the ratio of MHCSS staff and clinical staff, with some services having a much larger presence of clinical staff in the PARC service each day. It is possible that these differences may reflect variation in the balance between clinical and recovery-oriented functions and/or the different needs of the consumers accessing the service. While it is possible that these factors impact on consumer outcomes, further research to investigate this is required. Hence, the value of this mapping exercise in the context of our overall PARC services study is that these findings will assist us to interpret data from our other studies focused more on consumer outcomes.

A recovery-based model of service delivery was reported by all managers as the foundation of their PARC service delivery ethos. Aligned with the recovery-oriented model of care, a diverse range of group and individual programs were available to consumers; however, our data collection did not capture how the programs were delivered and to what extent consumers were able to direct the focus of the programs offered to meet their individual goals for recovery. For example, a group focusing on physical health is not recovery oriented if there is no choice, self-determination, or respect for individual decision making. Notwithstanding this limitation, the group programs described by participants indicated that most services provided programs covering the themes of *recovery and wellness*, *ADLs and self-management*, *physical health*, *psycho-therapeutic interventions*, *therapeutic milieu and activities*, and *social groups*. The combination of such a range of activities is aligned to the guidelines (16) and may support personal recovery by addressing the multi-faceted social, occupational, and health determinants of well-being and recovery. Concepts linked to recovery-oriented practice, such as connectedness, hope, identity, meaning and purpose, and empowerment (CHIME) (21), may be seen to be reflected in what is being supported by the activities in PARC services, for example, the involvement of peer workers in facilitating groups, connecting people to the local community, and support for self-management (22). These activities may also reflect the needs of people who attend PARC services and the sub-acute environment. Although there is an expectation that clinical services will also adopt recovery-oriented practice (23), this is much more difficult to achieve when inpatient length of stay is so short and the focus of care is generally on diagnosis, medication, and maintaining safety during a crisis (24). Hence, PARC services widen the opportunity to offer recovery-oriented group programs and other related activities. Further, the wide array of programs offered is likely to be a source of satisfaction for consumers who have reported dissatisfaction with the lack of engaging and meaningful activities in acute inpatient services (25).

Understanding how programs are offered and the extent of consumer input and choice requires further research. Just over half of the managers reported employing a peer worker, which may explain why not all PARC services reported individual peer support being available. Our survey did not specifically ask managers to describe how the mix of group and individual programs were decided; two managers chose to provide this detail, and their quotes provided strong indication of choice offered to consumers regarding the individual and group programs that they have access to during their admission.

The study also illustrated that consumers use the PARC services at different points in their recovery. They appeared to provide an important "bridging" service, acting as both a "step-up" service from community-based care, as well as a "step-down" service from inpatient care. The greater average number of consumers entering PARC services from the community is likely to be reflected in, and consequently shape, the types of activities and programs offered by the service. In their study of one Australian sub-acute residential service, Thomas and Rickwood (26) found that varying needs were identified by clients who were stepping up—seeking support with social skills and illness management—in contrast to those who were stepping down—valuing support with living skills and personal processes of recovery. Our findings appear to concur with those of Thomas and Rickwood (26), as the mix of consumers in PARC services may also explain the wide range of programs offered.

In terms of the KPIs set out in the government guidelines, the average length of stay was low, and the occupancy rate was highly variable. These findings pose a range of further questions, in particular, how a PARC service is positioned within a local system of care, with each local system operating under a range of unique forces that were not considered within this study. Length of stay is likely to be influenced by the relationship with the local inpatient unit and bed demand. The role of consumer preference in determining length of stay cannot be determined from these findings but may be an important factor. For example, in rural areas, the distance that consumers are from their home may deter extended stays (managers discussed this issue during the forum). The occupancy rates may be indicative of the length of time the PARC has been open, with newer services possibly still establishing themselves in the local area. It is worth noting that these figures came from the manager's memory of the previous 6 months, and other studies in this program of work will access and analyze more rigorously collected state-wide data.

QuIRC

The use of the QuIRC enabled valid comparison of the quality of the PARC services across Victoria and with similar English services. The individual domain average scores were generally higher than for supported accommodation services (27) in England. In the original validation of the QuIRC, service managers' ratings of quality (as indicated by the domain scores) concurred with consumer ratings of their care and autonomy (17), allowing some confidence that the ratings reflect consumer views and experiences of the care provided. The living environment domain was the highest-scoring domain across the PARC services, indicating that the built environment was a particular strength in Victoria, particularly in the purpose-built services. The second-highest-scoring domain was self-management and autonomy, reflecting an emphasis on promoting consumers' independence.

There was room for improvement on both the therapeutic environment domain, related to staffing, training, and supervision, and the treatments and interventions domain measuring clinical (medical, psychological, and social) interventions in PARC services. Further, there was a high degree of variation across PARC services on the treatments and interventions domain. PARC services have almost double the length of stay compared to inpatient units, but this remains a short length of stay when compared to other residential services. Hence, it may be challenging to provide tailored interventions efficiently, and this may explain the lower scores on the treatments and interventions domain than other domains. Further, these scores may highlight that although there is clinical input, PARC services are not operated as a clinical service. Usually, PARC services have more MHCSS resources compared to AMHS staffing. PARC services show comparable scores with similar service types in England but also variations within Victoria, demonstrating how the QuIRC can assist services to identify particular strengths and weaknesses (27). An example of a common challenge, suggested by low scores in both Victoria and England, is the incorporation of evidence-based practices into residential settings and mental health services in general (28).

The domain social interface (inclusion) was a mid-range score for the Victorian PARC services compared to scores on other domains, but in comparison to the supported accommodation services in the UK, it appears to be a strength for PARCs (27). Social interface measures the degree to which the service strengthens consumers' social networks *via* making links with community resources and engages with the consumers' families. This difference in PARC services may be due in part to the much shorter expected length of stay, thus producing a higher need to focus on external networks for consumers to ensure their continued recovery after discharge (15).

The domain of human rights was a relative strength for PARC services, highlighting that consumers' legal and civil rights are promoted and that consumers are involved in decision making about their care. However, when compared with supported accommodation services (27), PARC services may have room for improvement. Achieving higher scores in relation to human rights may be an important indicator that PARC services are aligned with their stated principle of least possible restrictive practices. It may be that comparable improvement in this domain is difficult to achieve in a short-stay sub-acute environment, as compared to the English longer-stay supported accommodation services described in Killaspy et al. (27), but this could still represent an aspirational goal for PARC services.

Another potential area for improvement is the domain of recovery-based practice, even though scores in PARC services are on par with supported accommodation services in England (27). Previous research has found that recovery-oriented practice can be challenging to incorporate into bed-based services (29). Furthermore, PARC service consumers are likely to be attempting to avoid a hospital admission or have just had an acute admission. This sub-acute level of need may be maintaining a focus on clinical issues rather than personal recovery. Personal recovery has been defined as

> "a deeply personal, unique process of changing one's attitudes, values, feelings, goals, skills, and/or roles. It is a way of living a satisfying, hopeful, and contributing life even within the limitations caused by illness. Recovery involves the development of new meaning and purpose in one's life as one grows beyond the catastrophic effects of mental illness (30; p2)"

and it may be that enabling emphasis on personal recovery is more challenging when there is a parallel imperative to achieve clinical outcomes—in particular, preventing admission (or readmission) to hospital. However, in English surveys, it has been found that higher scores related to recovery-based practice and human rights was positively associated with outcomes related to successful discharge to the community and progressing to more independent accommodation; hence, a challenge for PARC services may be to ensure that, in the context of a clinical and recovery-oriented partnership, the contributions of these domains to sub-acute care are appreciated (31).

Strengths and Limitations

The state-wide scope and completeness of the data set are strengths of this study. A further strength is the inclusion of the QuIRC, a validated measure of service quality. There are tensions when developing a service delivery survey to accurately capture the government guidelines. In an effort to enhance accuracy, the Victorian survey was collaboratively developed with all stakeholders; however, there may be limitations in the survey's ability to capture all of the activities that are occurring in the PARC services. Therefore, some important activities and how they are being delivered may not have been captured. The qualitative study included in our overall large evaluation project may enable more detailed description of the interventions in PARC services. Despite participants being asked to prepare relevant data before the forum, the findings may be limited by the recall of participants.

Conclusions

Gathering comprehensive descriptions of 19 PARC services and their practice demonstrates the degree of variation in the structure, resourcing, and content and quality of care offered across the Victorian PARCs, and provides a contextual foundation for the more rigorous qualitative and quantitative studies that are in process. The findings indicate emerging evidence that PARCs are providing recovery-oriented services that offer consumers autonomy and social inclusion, which future studies may find links to a positive consumer experience. The range of individual and group programs is in line with the Victorian guidelines, offering practical assistance, therapeutic activities, and socialization opportunities which may provide an early indication of positive regard from consumers (8, 11, 15). However, current guidelines provide a framework only; PARC service variation comes from local interpretation, partnership arrangements, and the degree to which recovery principles and use of evidence-based practices are understood and employed by the partners. The QuIRC domains "worked" to describe the PARCs, with living environment and self-management and autonomy domains highlighting strengths and therapeutic environment and treatments and interventions relative weaknesses across the PARCs that might be explained by the variation in staffing, consumers, and context. Our findings regarding outcome measurement highlight the need for increased assessment of recovery outcomes. To date, PARC services have focused measurement of outcomes on satisfaction and experience of service type surveys; determining effectiveness of these services will be strengthened by the use of a range of other consumer outcome measures. Together, other studies in our broader evaluation of PARCs in Victoria will do more to see if there are differences in consumer outcomes across PARCs.

DATA AVAILABILITY STATEMENT

The datasets generated for this study are available on request to the corresponding author.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ethics approval for this project was granted from The University of Melbourne's Human Research Ethics Committee (project number: 1647880.1). The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

CH, JF, LB, BH, and HK designed the study, with guidance from all other co-authors. JF, CH, LB, BH, and HK collected the data, with assistance from TH, LC, and PE. JF, CH, and LB analyzed the findings, with assistance from HK and BH. JF, CH, LB, BH, HK, TH, LC, and PE contributed to interpretation of the findings and reviewed and revised drafts of the manuscript.

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A Comprehensive Cohort Description and Statistical Grouping of Community-Based Residential Rehabilitation Service Users in Australia

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Background: Community Care Units (CCUs) are a model of community-based residential rehabilitation support available in Australia that assists people affected by severe and persistent mental illness to enhance their independent living skills and community involvement. These services have been subject to limited evaluation, and available descriptions of consumer cohorts lack relevance to the understanding of their rehabilitation needs.

Method: A clinical assessment battery covering a broad range of relevant domains was completed with consumers commencing at three CCUs in Queensland, Australia, between December 2014 and December 2017 (N = 145). The cohort was described based on demographic, diagnostic, treatment-related variables, and the assessment battery. The comparability of included sites was assessed. This contemporary cohort was also compared to the pooled cohort of Australian community-based residential rehabilitation services emerging from a previous systematic review. Additionally, cluster analysis (CA) was completed in two stages based on the clinician-rated assessments: hierarchical CA (Wards method) to identify the optimal number of clusters, followed by K-means clustering.

Results: Dominant features of the cohort were male sex and the primary diagnoses of schizophrenia spectrum disorders. The average consumer age was 31.4 years. Most consumers were referred from the community, had been living with family, and were not subject to involuntary treatment orders. No site-based differences were observed on demographic, diagnostic and treatment-related variables. However, some site-based variation in levels of symptoms and functional impairment emerged. Overall, the cohort was comparable with the Transitional Residential Rehabilitation (TRR) cohort defined in a previous systematic review. Through CA, a three-cluster solution emerged: Cluster 1 (15%) was characterised by higher levels of substance use comorbidity; Cluster 2 (39%)

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was characterised by higher levels of disability and symptoms; and Cluster 3 (46%) was distinguished by lower levels of general psychiatric symptoms.

Conclusions: The cohort was generally comparable to the TRR cohort. Site-based variability in the characteristics of admitted consumers was minimal. The CA solution suggested that three different sub-groups of consumers are admitted to CCUs, which have implications for adapting the approach to rehabilitation. Recommendations include ensuring early availability of interventions to address co-morbidities and pacing rehabilitation expectations to consumers stage of recovery.

Keywords: community care unit, rehabilitation, residential care, schizophrenia, severe and persistent mental illness

INTRODUCTION

Community Rehabilitation Units are public mental health services that provide time-limited recovery-oriented clinical rehabilitation support in a community residential setting (1). Most people who access mental health rehabilitation services in Australia and the United Kingdom are diagnosed with schizophrenia or a related psychotic disorder. Interventions provided by mental health rehabilitation services are complex and focus on improving psychosocial functioning while optimising clinical recovery (2). Care planning is done collaboratively and is personalised to the individual consumer's goals. Treatment is provided over an extended period, with an expectation of iterative progress towards multiple and changing goals. Service models, such as the Community Care Unit (CCU) model in Queensland and Victoria, have become increasingly available in Australia over the past 20 years despite limited research being available about patterns in service utilisation and the outcomes achieved for consumers (1). Planning the nature of care delivered at these services could be improved through clarification of the clinical and functional profiles of admitted consumers.

A recent systematic review found that descriptions of service users of Community Rehabilitation Units in Australia are generally limited to demographic and diagnostic information (1). This review defined contemporary services (operating from the early 2000s) as the Transitional Residential Rehabilitation (TRR) type. TRR service consumers were predominantly males, aged in their mid-30s, with a primary diagnosis of schizophrenia or a related psychotic disorder. Approximately half of these consumers were subject to an involuntary treatment order and the majority were referred from a community mental health service. These consumers demonstrate high levels of global impairment and psychosocial disability both at the commencement of rehabilitation and throughout the period of care. Although relevant, this information is insufficient to direct an understanding of what evidence-based rehabilitation interventions should be prioritised. Comprehensive rehabilitation assessment includes consideration of each consumer's symptoms, cognition, functional capacity, stage of recovery, social environment, strengths, coping strategies, and personal goals (3, 4).

Our qualitative analysis of staff perceptions of the work of an Australian Community Rehabilitation Unit suggested that they make intuitive distinctions between consumers who are and are not "rehabilitation ready" (5). The concept of readiness was linked to ideas about who should and should not be admitted to the CCU. Characteristics staff associated with not being ready included symptomatic acuity, active substance use, and accommodation instability. Additionally, staff identified deficits in their skills to support consumers with issues relating to youth mental health, substance use, and acute symptoms affecting consumers transferred from inpatient care. Clarifying the profile of people who utilise CCUs could inform policy and planning decisions regarding the adequacy of current models of care, and their role in the mental health services array.

The present study aims to provide a comprehensive description of service users at three CCUs in Queensland, Australia. Two of these units were trialling a novel "integrated staffing model" where peer support workers rather than nursing staff occupy the majority of staff roles (6). Additionally, cluster analysis (CA) was conducted with a view towards identifying whether any meaningful consumer subgroups could be characterised in line with the intuitive groupings qualitatively described by staff. CA is a statistically driven approach to classification within multivariate data sets that generates clusters (groups of cases) by maximizing the similarity of cases within each cluster and the dissimilarity between the clusters (7, 8). This approach has recently been applied to make sense of heterogeneous assessment data in a range of mental health populations (9–12).

It is hypothesised that the known characteristics associated with the TRR service type (1) will be replicated. Additionally, it

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Abbreviations: AC-QoL, Adult Carer Quality of Life; ACL, Allen Cognitive Levels; AUDIT, Alcohol Use Disorders Identification Test; ATSI, Persons identifying as being Aboriginal or Torres Strait Islander; BAS, Burden Assessment Scale; BPRS, Brief Psychiatric Rating Scale; CA, Cluster analysis; CR, Carer-rated measure; CL, Clinician-rated measure; CO, Consumer rated/self-report measure; CCU, Community Care Unit; HoNOS, Health of the Nation Outcome Scale; LSP-16, Life Skills Profile-16; MHI-38, Mental Health Inventory; PRPP, Perceive Recall Plan & Perform System of Task Analysis; SANS, Scale for the Assessment of Negative Symptoms; SFS, Social Functioning Scale; SPMI, Severe and Persistent Mental Illness; STORI-30, Stages of Recovery Instrument; TRR, Transitional Residential Rehabilitation.

is hypothesised that CA will identify sub-groups of consumers consistent with the intuitive groupings described by staff in our qualitative study (e.g. presence/absence of substance use issues, symptomatic acuity, referral source (acute inpatient/non-acute inpatient) and accommodation issues. The impact of the integrated staffing model on service utilisation will also be explored. While it is hypothesised that similar consumers will access the services based on the shared service model, it is possible that the altered staffing configuration may impact the profile of consumers accepted into the service.

METHODS

Ethical Clearance and Protocol Availability

This study presents cross-sectional data emerging from a parent prospective cohort study. The protocol for the parent study was developed following the STROBE statement (13) and published as a study in progress in June 2016 (2).

Study Context

The three CCUs under investigation are operated by a large public mental health service in Brisbane, the capital city of the state of Queensland in Australia. These CCUs are clinically operated public residential mental health services consistent with the TRR type defined in the typology by Parker et al. (1). The units operate under a shared model of service that focuses on the provision of transitional residential support to consumers aged 18–65 years who have a severe and persistent mental illness that substantially impairs their psychosocial functioning and capacity for independent living (14). The model of service designates the service as being recovery-oriented, and the nature of support described is consistent with the Australian National Framework for Recovery Oriented Mental Health Services (15).

Accommodation is provided in independent living units in a cluster-housing arrangement. The services are staffed 24-hours a day, with rehabilitation support focused on enhancing independent living skills (e.g. budgeting, cooking and cleaning) and community integration. Therapeutic interventions are also available on site including Cognitive Behaviour Therapy, Cognitive Remediation Therapy (16) and social cognitive interventions (17, 18). It is expected residents will be assisted to transition from the CCU to an alternative residence in the community after 6–24 months.

An "integrated staffing model" was being trialed at two of the three study sites. Under this staffing configuration peer support workers rather than nursing staff occupy the majority of staff roles (6). These peer support workers are employed based on their lived experience of mental issues and recovery, and actively contribute as a part of the multi-disciplinary team to the planning and delivery of rehabilitation support. This alternative staffing configuration was not intended to alter the core service model and rehabilitation function of the CCUs. Further details about the study sites are provided in **Table 1**.

Consumer's commencing at a CCU understand the nature of the service and have positive expectations of the experience including that of personal transformation (21, 22). Importantly, the way consumer hope to be treated in these settings is consistent with the principles of recovery-oriented care. Consumers describe several types of goals associated with service engagement, including independent living, getting a job, social re-integration and skills development, and improved health and fitness (22). While most consumers indicate they are actively involved in the decision to come to a CCU, issues of accommodation instability are a more commonly reported motivation than the availability of rehabilitation support (22).

Participants and Data Collection

Recruitment occurred between December 2014 and December 2017. The commencement of recruitment coincided with the opening of the two sites operating the integrated staffing model. The site operating the clinical staffing model commenced operation in 2012, while the two integrated staffing models commenced operation in December 2014 and January 2015. A clinical assessment battery was completed with all consumers on service entry, including measures of direct relevance to the planning of individualized rehabilitation support. All consumers entering the CCU who remained beyond the 6-week initial assessment phase were eligible for inclusion in the study. A total of 145 out of the 161 (90%) consumers meeting the inclusion criterion provided voluntary informed consent for their data to be included in the study. Data was collected prospectively using a paper-based assessment battery by trained staff. The nature of the assessment and care delivered to consumers did not alter based on study participation.

The clinical assessment battery covered a broad range of domains relevant to the planning and evaluation of rehabilitation care (see **Table 2**). This battery was completed within the first 6-weeks of each consumer's stay.

Analyses

All analyses were completed in IBM SPSS Statistics Version 25. Statistical significance was assessed at an alpha value of 0.05. Where relevant, the Bonferroni correction was applied for multiple comparisons.

Cohort Description

Demographic, diagnostic, treatment-related, and assessment measures were analyzed using descriptive statistics. For the Brief Psychiatric Rating Scale (BPRS), the sub-scales derived from the factor analysis of Lachar et al. (26) were calculated.

Comparability of Included Sites

For dichotomous and nominal variables the comparability of the data collected from the three included sites was assessed using chi-square or Fisher's exact test when the expected cell count for any cell was <5 (35). Where significant differences on contingency tables exceeding 2 × 2 were found, adjusted standardized residuals were assessed to identify cells having

TABLE 1 | Details about the location, referring district, philosophy of care, physical environment, and staffing of the study sites.

			Site 1	Site 2	Site 3
Location		Distance from state capital (km)	4.2	30.9	21.2
		Socio-Economic Disadvantage, 2011* (19)	90	83	46
Referring district		Population (20)	588,475	143,628	287,517
		Acute inpatient services	Yes	Yes	Yes
		Community mental services	Yes	Yes	Yes
		Inpatient rehabilitation mental health beds	No	Yes	No
		Transitional housing team	Yes	No	No
		Outpatient community-based rehabilitation	Yes	No	Yes
		Mental health homelessness team	Yes	No	Yes
CCU	Philosophy of care	Recovery-oriented	Yes	Yes	Yes
		Strengths-based	Yes	Yes	Yes
		Designated rehabilitation focus	Yes	Yes	Yes
		Voluntary engagement in rehabilitation^	Yes	Yes	Yes
		Individualised care planning	Yes	Yes	Yes
		Transitional support	Yes	Yes	Yes
		Peer support role in care planning and delivery	Limited	Focused	Focused
	Physical environment	Maximum occupancy (consumers)	20	20	16
		Self-contained independent living units	20	20	15
		Disabled access units	1/20	1/20	1/15
		Shared recreation and leisure facilities	Yes	Yes	Yes
	Treatment & support	Individual psychotherapy support (CBT)	Yes	Yes	Yes
		Living skills support and development	Yes	Yes	Yes
		Structured leisure and physical activities	Yes	Yes	Yes
		Evidence-based therapeutic group programmes	Yes	Yes	Yes
	Staffing	Staffing model	Clinical	Integrated	Integrated
		Total FTE staff	21.5	24.5	18.4
		Total FTE peer-support staff	0.6	16	10.4
		Total FTE clinical staff	19.9	7.5	7
		Peer support: Clinical staff ratio	0.03	2.13	1.49
		Staff: Consumer ratio	1.08	1.23	1.15

**Local Government Area (LGA) percentile rank of the index of Relative Socio-Economic Disadvantage in comparison to all other LGAs in Australia, higher scores Equate to lower levels of disadvantage.*

^ Involuntary consumers are accepted at all three CCUs with explicit emphasis on voluntary engagement in available rehabilitation activities.

TABLE 2 | Domains, focus, measures and raters of the initial clinical assessment battery.

Domain	Focus	ACL*	AC-QoL*	AUDIT*	BAS*	BPRS*,#	HONOS*	MHI-38*	LSP-16*	PRPP*	SANS*	SFS*	STORI-30*
Behaviour	Compliance	–	–	–	–	–	–	–	CL^	–	–	–	–
	Problematic	–	–	–	–	–	CL	–	–	–	–	–	–
	Resistance	–	–	–	–	CL	–	–	–	–	–	–	–
Carer	Carer burden	–	–	–	CR^	–	–	–	–	–	–	–	–
	Carer quality of life	–	CR	–	–	–	–	–	–	–	–	–	–
Functioning	Disability	–	–	–	–	–	–	–	CL	–	–	–	–
	Functioning (Task)	–	–	–	–	–	–	–	–	CL	–	–	–
	Global functioning	–	–	–	–	–	CL	–	–	–	–	–	–
	Social function	–	–	–	–	–	CL	–	–	–	–	CL	–
Recovery	Wellbeing	–	–	–	–	–	–	CO	–	–	–	–	–
	Recovery	CL	–	–	–	–	–	–	–	–	–	–	CO^
Symptoms	Cognition		–	–	–	–	CL	–	–	–	–	–	–
	Negative symptoms	–	–	–	–	CL	–	–	–	–	CL	–	–
	Positive symptoms	–	–	–	–	CL	–	–	–	–	–	–	–
	Distress	–	–	–	–	CL	CL	CO	–	–	–	–	–
	Substance use	–	–	CL/CO	–	–	CL	–	–	–	–	–	–

**Measures: Adult Carer Quality of Life (AC-QoL) (23), Alcohol Use Disorders Identification Test (AUDIT) (24), Allen's Cognitive Levels (ACL) (25), Brief Psychiatric Rating Scale (BPRS) (26), Burden Assessment Scale (BAS) (27), Health of the Nation Outcome Scale (HoNOS) (28), Life Skills Profile (LSP-16) (29), Mental Health Inventory (MHI-38) (30), Perceive Recall Plan & Perform System of Task Analysis (PRPP) (31), Scale for the Assessment of Negative Symptoms (SANS) (32), Social Functioning Scale (SFS) (33), Stages of Recovery Instrument (STORI-30) (34).*

[#] *Factor structure for BPRS derived from Lachar et al. (26).*

^ Raters: Clinician-rated measure (CL), Consumer rated/self-report measure (CO), Carer rated measure (CR).

a statistically significant difference between the observed and expected frequencies (36). For significant differences identified through chi-square analyses, the contribution of individual cells was examined using the +/-2 criteria for adjusted standardized residuals (37).

For continuous and scaled variables, normality was assessed using the Shapiro-Wilks W test, and homogeneity of variance was assessed using Levene's test. ANOVA was used for variables not violating these assumptions. For variables violating the assumption of normality the Kruskal-Wallis statistic was calculated. If marked differences in sample size from the study sites emerged and the assumption of homogeneity of variance was violated the use of Welch's ANOVA was planned to be considered. Analyses were also repeated using only the subset of consumers diagnosed with schizophrenia spectrum disorders (F20-29.x); these analyses are presented in the **Supplementary Materials**.

Comparison With the Pooled Transitional Residential Rehabilitation Cohort

The equivalence of the cohort with the available data from a pooled TRR cohort generated through a previous systematic review (1) was evaluated using independent samples chi-square/Fisher's exact test for categorical variables. Statistical comparison of continuous variables was unable to be performed due to inconsistently reported standard deviations in the studies included in the TRR cohort. The contribution of other studies associated with sub-samples derived from the cohort generated in the present study (n = 24) (20) was removed from the pooled TRR cohort before comparisons occurred. Only variables with data available from ≥50% of the total cases in the TRR cohort were considered.

Approach to Missing Data

Patterns of missing data in the assessment battery were explored using the SPSSv25 Missing Values Analysis module. Levels of missing data are detailed in the Results section, and variables with ≥50% missing data were excluded. The acceptability of the assumption that data was at least missing at random was considered based on the total scores for included measures using Little's MCAR test.

Cluster Analysis

The CA was run on complete cases using a reduced set of clinician-rated variables where the level of missing data did not exceed 80%. A two-stage approach was taken with a view to achieving an optimal clustering algorithm (7, 38, 39):

1. Hierarchical CA using Wards methods of minimum variance based on squared Euclidean distance was conducted to identify an optimal number of clusters. The optimal number of clusters was determined based on examination of the magnitude of change of in the coefficients on the agglomeration schedule, and verified *via* examination of the scree plot ("elbow method") as well as inspection of the dendrogram.
2. The hierarchical CA was repeated using k-means clustering to segregate the cohort into the optimal number of clusters defined at Stage 1.

The reliability of the cluster solution was evaluated through examination of the stability of cluster membership on re-assignment using two methods suggested in the literature (40): k-means clustering of a randomly selected 50% sample of cases, and with randomization of case order. Confirmatory (standard) discriminant function analysis was used to establish which clinician-rated variables best distinguished the cluster groups; variables were considered important contributors if the coefficient was ≤-.3 or ≥.3 (41). Differences in the demographic, diagnostic and assessment profile of the identified cluster sub-groups were assessed using an identical analytic approach to that outlined under the sub-heading "Comparability of Included Sites".

RESULTS

Comprehensive Cohort Description

The admission cohort included 145 consumers. Complete data was available for all demographic (**Table 3**), diagnostic (**Table 4**) and treatment-related variables (**Table 5**). Due to extensive missing data in the carer-rated measures [ACQoL (71.7%) and BAS (69.7%)], these measures were omitted from the analysis. The proportion of missing data in the assessment battery was less than 10% for all clinician and consumer-rated measures, except for the PRPP (23.4%). Following exclusion of the carer-rated measures: 40% of cases had missing data in the assessment battery; the overall proportion of missing data was 7.3%; and the acceptability of the assumption that data was missing at random was supported ($X^2_{(128)}$ = 154.006, p=.058). Clinician-rated measures are summarized in **Table 6**, and consumer-rated measures are summarized in **Table 7**. Additional information is available in the **Supplementary Materials**, including *post hoc* comparisons, and sub-analyses limited to the F20-29.x diagnostic grouping.

Comparability of Included Sites

No statistically significant differences emerged in the study sites for demographic and treatment-related variables. The only difference between study sites with regards to diagnostic variables was the likelihood of being a current smoker at the time of admission. Consumers admitted to Site 1 (clinical staffing, adjusted residual -4.860) were less frequently current smokers than those at the two integrated staffing model sites (Sites 2 and 3, adjusted residuals 3.002 and 2.016, respectively).

Statistically significant differences emerged in the total measure scores on the clinical assessment battery for Health of the Nation Outcome Scale (HoNOS), Social Functioning Scale (SFS), and Alcohol Use Disorders Identification Test (AUDIT); but not for Life Skills Profile (LSP-16), Allen's Cognitive Levels (ACL), or Scale for the Assessment of Negative

TABLE 3 | Demographics of the CCU admission cohort.

Staffing model	**Clinical**	**Integrated**		**Total**	**Test**[e]	**p**
Site	**Site 1** **(n = 53)**	**Site 2** **(n = 52)**	**Site 3** **(n = 40)**	**N = 145**		
Demographics						
Age at admission ($\bar{x}$, years)	31.1 (8.7)	32.1 (8.7)	31.0 (9.8)	31.4 (9.0)	$F_{(2,142)} = .214$	.808
Male sex	66.0%	78.8%	77.5%	73.8%	$X^2_{(2)} = 2.619$	.270
Australian born	86.8%	90.4%	77.5%	85.5%	$X^2_{(2)} = 3.140$	.208
ATSI identification	6.0%	3.8%	10%	6.2%	Fisher's Exact Test[f]	.525
Unemployment[a]	90.6%	82.7%	95.0%	89.0%	$X^2_{(2)} = 3.707$	.157
Accommodation (most recent)[b]					Fisher's Exact Test[f]	.066
Living with family	56.6%	50.0%	72.5%	58.6%	–	–
Supported housing	18.9%	5.8%	10.0%	11.7%	–	–
Private rental	9.4%	15.4%	10.0%	11.7%	–	–
No fixed address	7.5%	21.2%	2.5%	11.0%	–	–
Other	7.5%	7.7%	5.0%	6.9%	–	–
Highest education level[c]					$H_{(2)} = 1.898$	.387
Primary school	5.7%	3.8%	7.5%	5.5%	–	–
Year 10	41.5%	55.8%	50.0%	49.0%	–	–
Year 12	34.0%	19.2%	35.0%	29.0%	–	–
Tertiary[d]	18.9%	19.2%	7.5%	15.9%	–	–

[a] *Unemployment is exclusive of any form of paid or unpaid vocational activity including volunteering.*

[b] *Accommodation reflects the most recent community residence prior to CCU entry, public housing accounted for 70% of the 'Other' category.*

[c] *Treated as a scaled variable based on increasing levels of education, Kruskall-Wallis test applied.*

[d] *Inclusive of any engagement in tertiary education including vocational training regardless of completion*

[e] *For categorical variables, X^2 was applied unless the expected count for any cell was <5, in this case, Fisher's Exact test was calculated.*

[f] *Unadjusted odds ratio: Accommodation = 14.200, ATSI identification = 1.500.*

TABLE 4 | Primary diagnosis and co-morbidity data for CCU Admission cohort.

Staffing model	**Clinical**	**Integrated**		**Total**	**Test**[b]	**p**
Site	**Site 1** **(n = 53)**	**Site 2** **(n = 52)**	**Site 3** **(n = 40)**	**N = 145**		
Primary diagnosis						
F20-29.x Schizophrenia spectrum	71.7%	73.1%	90.0%	77.2%	$X^2_{(2)} = 5.143$	.076
Specific disorders[a]:						
- F20.x Schizophrenia	47.2%	65.4%	67.5%	59.3%	–	–
- F25.x Schizoaffective disorder	18.9%	5.8%	17.5%	13.8%	–	–
- F29.x Unspecified psychosis	5.7%	1.9%	5.0%	4.1%	–	–
- F31.x Bipolar disorder	15.1%	11.5%	2.5%	10.3%	–	–
- F32-34.x Depressive disorders	5.7%	11.5%	5.0%	7.6%	–	–
- Other disorders	7.4%	3.9%	2.5%	4.9%	–	–
Secondary diagnoses/issues						
Current tobacco use	30.2%	73.1%	70.0%	56.6%	$X^2_{(2)} = 23.715$	.000
Substance use	37.7%	53.8%	42.5%	44.8%	$X^2_{(2)} = 2.875$	.237
Physical health issue	22.6%	17.3%	35.0%	24.1%	$X^2_{(2)} = 3.967$	.138
Trauma history	9.4%	11.5%	7.5%	9.7%	Fisher's Exact Test[c]	.883
Anxiety disorder	11.3%	9.6%	2.5%	8.3%	Fisher's Exact Test[c]	.290
Developmental disorder	7.5%	9.6%	7.5%	8.3%	Fisher's Exact Test[c]	.932
Personality disorder	5.7%	9.6%	5.0%	6.9%	Fisher's Exact Test[c]	.711
Obsessive-Compulsive Disorder	1.9%	9.6%	2.5%	4.8%	Fisher's Exact Test[c]	.152

[a] *Test statistic calculated only for the presence/absence of F20-29.x diagnoses (see above) given the number of diagnostic categories.*

[b] *For categorical variables, the Chi-Square test was applied unless the expected count for any cell was <5, in this case, Fisher's Exact test was calculated.*

[c] *Unadjusted odds ratio: Trauma history = 0.445, Anxiety disorder = 0.256, Developmental disorder = 0.266, Personality Disorder = 0.890, Obsessive-Compulsive Disorder = 3.321.*

Symptoms (SANS). Total HoNOS was higher at Site 1 (clinical staffing) than Site 3, indicating better mental health and social functioning. Total SFS was lower at Site 1 (clinical staffing) than Sites 2 & 3 indicating better social functioning. Total BPRS was lower at Site 2 than Site 3, indicating lower levels of psychiatric symptoms at this site. Total AUDIT was lower at Site 1 than Site 2, indicating lower levels of problematic alcohol use at Site 1.

TABLE 5 | Treatment-related information for the CCU admission cohort.

Staffing model	Clinical	Integrated		Total	Test	p
	Site 1 (n = 53)	Site 2 (n = 52)	Site 3 (n = 40)	(N = 145)		
Referral and Legal status						
Community-based referral[a]	56.6%	63.5%	62.5%	60.7%	$X^2_{(2)}$ = .593	.743
Involuntary treatment[b]	52.8%	51.9%	32.5%	46.9%	$X^2_{(2)}$ = .4.606	.102
Guardianship order present	5.7%	3.8%	5.0%	4.8%	Fisher's Exact Test[c]	1.000
Medications prescribed						
Anti-psychotic medication:						
- CPZ equivalent dose ($\bar{x}$, mg)	436.2 (365.3)	436.4 (284.5)	361.3 (257.7)	415.6 (309.8)	$K_{(2)}$ = 2.073	.355
- Depot prescribed	45.3%	50.0%	40.0%	45.5%	$X^2_{(2)}$ = 0.914	.633
- Clozapine prescribed	17.0%	25.0%	37.5%	25.5%	$X^2_{(2)}$ = 5.061	.080
- Number of antipsychotics	1.36 (0.71)	1.42 (0.696)	1.15 (0.58)	1.32 (0.676)	$K_{(2)}$ = 4.528	.104
Mood stabiliser:						
- Lithium	20.8%	21.2%	10.0%	17.9%	$X^2_{(2)}$ = 2.364	.307
- Sodium valproate	9.4%	15.4%	12.5%	12.4%	$X^2_{(2)}$ = .855	.652
- Other	7.5%	3.8%	0.0%	4.1%	$X^2_{(2)}$ = 3.291	.193
Other medication:						
- Antidepressant	41.5%	44.2%	42.5%	42.8%	$X^2_{(2)}$ = .081	.960
- Benzodiazepine(s)	13.2%	17.3%	7.5%	13.1%	$X^2_{(2)}$ = 1.911	.385

[a] *Community-based referral compared to combined acute (35.2%) and sub-acute (4.1%) inpatient referral source.*

[b] *Involuntary treatment includes both Involuntary Treatment Orders (43.5%) and Forensic Orders (3.4%).*

[c] *Unadjusted odds ratio: Guardianship order present = .359.*

Comparability With the TRR-Cohort Presented in Parker et al.

Full details of the comparisons between our cohort and the modified TRR cohort are provided in the **Supplementary Materials**. Statistical comparison between our sample and the modified TRR cohort found no significant differences in the distribution of demographic variables, including male sex (73.8% versus 72.5%, $X^2_{(2)}$ = 0.106, p = .744), Australian-birth (85.5% versus 85.0%, $X^2_{(2)}$ = 0.030, p = .863), and identification as an Aboriginal and/or Torres Strait Islander (ATSI, 6.2% versus 9.3%, $X^2_{(2)}$ = 1.455, p = .228). The absence of standard deviation data prevented statistical comparison of the weighted mean age in the modified TRR cohort and our sample (35.5 and 31.4 years, respectively). The frequency of being subject to a guardianship order was lower in our sample than the modified TRR cohort (4.8% versus 42%, $X^2_{(2)}$ = 71.61, p = .000). No significant differences on other available treatment-related variables were identified between our cohort and the modified TRR cohort: community-based referral (60.7% versus 55.7%, $X^2_{(2)}$ = 1.199, p = .274) and involuntary treatment (46.9% versus 49.1%, $X^2_{(2)}$ = .255, p = .614).

A primary diagnosis of F20-29.x disorders occurred less frequently in our cohort than the modified TRR cohort (77.2% versus 86.2%, $X^2_{(2)}$ = 8.046, p = .005). Substance use issues occurred more frequently in our sample than in the modified TRR cohort (44.8% versus 20.5%, $X^2_{(2)}$ = 40.469, p = .000), and physical health issues were identified less commonly (24.1% versus 36.4%, $X^2_{(2)}$ = 8.499, p = .004).

Cluster Analysis

The CA was performed on the 111 cases (76.6%) that had complete data for clinician-rated assessments excluding the PRPP. Hierarchical CA using Ward's Method identified three as the optimal number of clusters to be evaluated based on the visually assessed demarcation point of agglomeration coefficients via scree plot. Hierarchical CA was then re-run using the K-means method to allocate cases across 3 clusters optimally. The cluster solution distributed 17 cases to Cluster 1, 43 cases to Cluster 2 and 51 cases to Cluster 3. The reliability of this solution was supported by identical re-allocation of 91% of cases following case order randomization and 73% of cases when a random sample of ~50% of cases was analyzed.

Confirmatory discriminant function analysis identified two functions (Λ_{14}.378, p < .000): Function 1 accounting for 59.6% of the variance, and Function 2, accounting for 40.5% of the variance. The structure matrix indicated that the variables making important contributions to discrimination between clusters were: LSP-16, HoNOS, BPRS, SFS, and SANS (Function 1: .489, .405, .401, .381, and .353 respectively); and AUDIT (Function 2: .911). **Figure 1** presents the z-score means and standard errors for these discriminating variables. Cluster 1 allocation infrequently occurred (15% of the sample) and was characterized by higher levels of alcohol use (AUDIT) than the other clusters. Cluster 2 (39% of the sample) was characterized by higher levels of disability (LSP-16), lower levels of mental health (HoNOS) and social function (HoNOS and LSP), and higher levels of negative psychotic symptoms (SANS) than the other clusters. Cluster 3 predominated (46% of the sample) and was characterized lower levels of general psychiatric symptoms (BPRS) than the other clusters.

No significant differences emerged between the clusters on the demographic or treatment-related variables (**Tables 8**, **9**). The only significant differences between the clusters on diagnostic variables were the increased likelihood of co-morbid substance use issues ($X^2_{(2)}$ = 21.240, p < .000, adjusted residual = 4.6) and co-morbid personality disorder/traits (Fisher's exact test p < .042, adjusted residual = 2.8) for participants assigned to Cluster 1

TABLE 6 | Clinical assessment battery for the CCU admission cohort, mean scores and standard deviation.

Staffing model	**Clinical**		**Integrated**				**Total**			
	Site 1		**Site 2**		**Site 3**					
	n	**$\bar{x}$(SD)**	**n**	**$\bar{x}$(SD)**	**n**	**$\bar{x}$(SD)**	**N[a]**	**$\bar{x}$(SD)**	**Test**	**p**
Functioning and disability										
HoNOS (Total)	53	8.98(6.125)	51	9.75(4.707)	40	12.80(6.638)	144	10.31(5.992)	$K_{(2)} = 9.444$	.009[b]
- Behaviour		1.13(1.699)		1.06(1.475)		1.20(1.682)		1.13(1.608)	$K_{(2)} = .169$	.919
- Impairment		1.38(1.431)		1.49(1.317)		2.48(1.633)		1.72(1.517)	$K_{(2)} = 13.293$	.001[c]
- Symptoms		2.74(2.159)		3.65(2.331)		4.55(2.501)		3.56(2.414)	$K_{(2)} = 12.303$	.002[b]
- Social		3.74(2.995)		3.55(2.766)		4.58(3.161)		3.90(2.974)	$K_{(2)} = 2.740$	.254
LSP-16 (Total)	50	10.78(5.643)	51	12.53(6.166)	39	13.62(5.775)	140	12.21(5.945)	$K_{(2)} = 5.262$	.072
- Withdrawal		2.58(1.864)		2.92(1.864)		3.26(1.860)		2.89(1.869)	$K_{(2)} = 4.042$	.132
- Self-care		3.38(2.118)		4.53(2.411)		5.38(2.208)		4.36(2.378)	$K_{(2)} = 16.799$	.000[b]
- Compliance		2.14(1.539)		2.10(1.652)		1.77(1.512)		2.02(1.571)	$K_{(2)} = 1.036$	.596
- Anti-social		1.48(1.515)		1.43(1.723)		1.46(1.620)		1.46(1.611)	$K_{(2)} = .212$	.899
Allen Cognitive Level	51	5.03 (.405)	48	5.16(.4261)	40	5.01(337)	139	5.07(.398)	$K_{(2)} = 5.345$	.069
Social Functioning Scale	51	107.05(7.814)	50	102.95(7.996)	39	100.84(7.784)	140	103.85(8.224)	$K_{(2)} = 13.362$	.001[d]
Symptomatic measures										
BPRS-18 (Total)	51	37.47(8.889)	46	36.67(9.778)	36	42.81(9.730)	133	38.64(9.707)	$K_{(2)} = 8.162$	.017[e]
- Resistance		6.08(2.606)		5.89(1.816)		5.92(2.285)		5.97(2.256)	$K_{(2)} = .290$	.865
- Positive symptoms		10.51(5.108)		10.33(4.634)		12.25(5.369)		10.92(5.054)	$K_{(2)} = 3.337$	.189
- Negative symptoms		6.76(3.664)		6.02(3.363)		7.69(3.060)		6.76(3.442)	$K_{(2)} = 6.790$	.034[e]
- Psychological discomfort		13.00(4.152)		13.09(5.001)		15.50(5.364)		13.71(4.888)	$F_{(2,130)} = 3.449$	.035[f]
SANS (Total)	51	43.53(18.884)	49	49.53(16.686)	36	50.61(18.243)	136	47.57(18.094)	$F_{(2,133)} = 2.102$	.126
- Affective flattening		14.65(8.756)		14.90(8.295)		14.94(8.349)		14.77(8.442)	$K_{(2)} = .122$	.941
- Alogia		3.29(4.125)		4.86(4.168)		5.58(4.129)		4.53(4.267)	$K_{(2)} = 10.231$	.006[d]
- Avolition/apathy		8.71(4.494)		10.27(2.782)		10.64(3.331)		9.78(3.699)	$K_{(2)} = 8.643$	.013[b]
- Anhedonia/asociality		13.41(5.193)		15.08(3.834)		14.69(4.125)		14.29(4.553)	$F_{(2,133)} = 1.892$	.155
- Attention		3.47(3.349)		4.43(3.482)		4.75(2.802)		4.17(.374)	$K_{(2)} = 4.564$	.102
Substance use (alcohol)										
AUDIT	48	4.90(7.856)	50	10.38(10.111)	35	6.80(6.957)	133	7.46(8.839)	$K_{(2)} = 12.809$	.002[g]

[a] *Available sample size varies based on missing data: HoNOS (.9%), LSP-16 (3.5%), Allens Cognitive Level (4.1%), SFS (3.4%), BPRS-18 (8.3%), SANS (6.2%) and AUDIT (8.3%).*

[b] *Post-hoc tests with Bonferroni correction for multiple tests identified statistically significant pairwise comparison between Sites 1 and 3 only.*

[c] *Post-hoc tests with Bonferroni correction for multiple tests identified statistically significant pairwise comparison between Site 3 and Sites 1&2.*

[d] *Post-hoc tests with Bonferroni correction for multiple tests identified statistically significant pairwise comparison between Site 1 and Sites 2&3.*

[e] *Post-hoc tests with Bonferroni correction for multiple tests identified statistically significant pairwise comparison between Sites 2 and 3 only.*

[f] *Post-hoc tests with Bonferroni correction for multiple tests identified no statistically significant pairwise comparisons.*

[g] *Post-hoc tests with Bonferroni correction for multiple tests identified statistically significant pairwise comparison between Sites 1 and 2 only.*

TABLE 7 | Consumer rated assessments for the CCU admission cohort.

	Clinical staffing		**Integrated staffing**				**Total**			
	Site 1		**Site 2**		**Site 3**					
	n	**$\bar{x}$(SD)**	**n**	**$\bar{x}$(SD)**	**n**	**$\bar{x}$(SD)**	**N[a]**	**$\bar{x}$(SD)**	**Test**	**p**
Mental Health Inventory (Total)	52	57.52(17.076)	52	53.17(21.787)	40	56.40(21.358)	144	55.64(20.034)	$K_{(2)} = 1.899$	.387
Psychological wellbeing		47.50(21.775)		41.92(25.469)		47.08(19.737)		45.37(22.660)	$K_{(2)} = 1.488$	.475
Psychological distress		34.04(21.718)		38.90(24.579)		32.60(24.674)		35.40(23.602)	$K_{(2)} = 1.385$	.500
STORI-30	45	–	47	–	40	–	132	–	Fisher's exact[b]	.318
Moratorium	7	15.6%	5	10.6%	2	5.0%	14	10.6%		
Awareness	17	37.8%	10	21.3%	18	45.0%	45	34.1%		
Preparation	3	6.7%	3	6.4%	3	7.5%	9	6.8%		
Rebuilding	7	15.6%	13	27.7%	6	15.0%	26	19.7%		
Growth	11	24.4%	16	34.0%	11	27.5%	38	28.8%		

[a] *Available sample size varies based on missing data: MHI (.6%), STORI-30 (9.0%).*

[b] *Unadjusted odds ratio: STORI-30 = 9.228.*

(**Table 10**). Patterns of sub-scale data for the clinician-rated variables were generally consistent with the findings based on the total scores (**Table 11**).

Significant differences between the clusters emerged for the consumer-rated assessments (**Table 12**). Consumers allocated to Cluster 3 scored higher (more favorably) on the MHI-38 ($K_{(2)}$ =

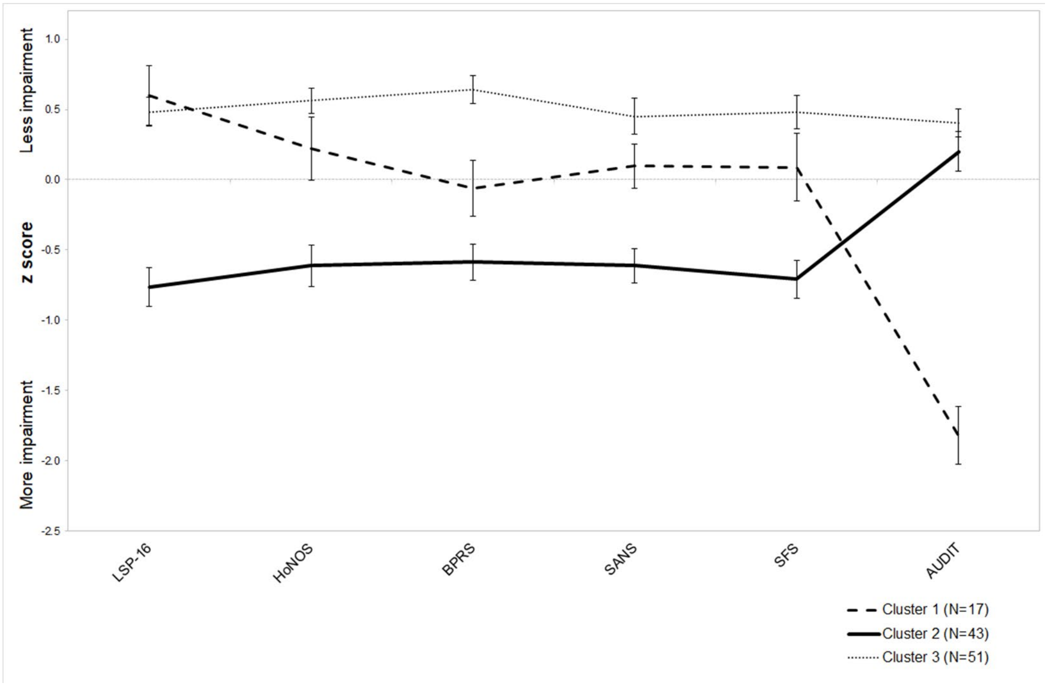

FIGURE 1 | Final cluster solution with z-score means and standard error by cluster for variables making a significant contribution to the underlying factors.

TABLE 8 | Demographics by cluster.

Site	**Cluster 1 (n = 17)**	**Cluster 2 (n = 43)**	**Cluster 3 (n = 51)**	**TOTAL (N = 111)**		
Demographics						
Age at admission ($\bar{x}$, years)	31.35(7.441)	32.98(10.809)	29.82(8.294)	31.28(9.276)	$F_{(2,108)} = 1.357$	.262
Male sex	76.5%	79.1%	70.6%	74.8%	Fisher's Exact Test	.669
Australian born	88.2%	90.7%	86.3%	88.3%	Fisher's Exact Test	.857
ATSI identification	17.6%	4.9%	6.3%	7.2%	Fisher's Exact Test	.178
Unemployment[a]	82.4%	97.7%	90.2%	91.9%	Fisher's Exact Test	.090
Accommodation (most recent)					Fisher's Exact Test	.133
Living with family	58.8%	55.8%	62.7%	59.5%	–	–
Supported housing	5.9%	20.9%	5.9%	11.7%	–	–
Private rental	23.5%	7.0%	9.8%	10.8%	–	–
No fixed address	5.9%	7.0%	17.6%	11.7%	–	–
Other[b]	5.9%	9.3%	3.9%	6.3%	–	–
Highest education level[c]					$H_{(2)} = 3.538$	.171
Primary school	5.9%	4.7%	7.8%	6.3%	–	–
Year 10	52.9%	55.8%	35.3%	45.9%	–	–
Year 12	35.3%	25.6%	35.3%	31.5%	–	–
Tertiary[d]	5.9%	14.0%	21.6%	16.2%	–	–

[a] *Unemployment is exclusive of any form of paid or unpaid vocational activity including volunteering.*

[b] *Public housing accounts for 70% of the 'Other' category.*

[c] *Treated as a scaled variable based on increasing levels of education, Kruskal-Wallis test applied.*

[d] *Inclusive of any engagement in tertiary education including vocational training regardless of completion.*

10.445, p = .005, pairwise comparisons between Cluster 1 and 2 were both statistically significant), this difference being driven by higher ratings on the psychological wellbeing sub-scale ($K_{(2)} = 11.118$, p = .004, pairwise comparisons between Cluster 1 and 2 were both statistically significant). Differences in the likelihood of allocation to various stages of recovery (STORI-30) emerged (Fisher's exact test = .015, unadjusted odds ratio 17.810). These differences were accounted for by the increased likelihood of being in the "moratorium" phase and reduced likelihood of "growth" phase for Cluster 2 (adjusted standardized residuals 2.0 and -2.5 respectively), and reduced likelihood of being in the "moratorium" phase and increased likelihood of being in the "growth" phase for Cluster 3 members (adjusted standardized residuals -2.5 and 3.3 respectively).

TABLE 9 | Treatment-related variables by cluster.

	Cluster 1 (n = 17)	Cluster 2 (n = 43)	Cluster 3 (n = 51)	TOTAL (N = 111)	Test[b]	p
Referral and Legal status						
Community-based referral	52.9%	69.8%	62.7%	64.0%	$X^2_{(2)} = 1.557$	.459
Involuntary treatment[b]	41.2%	41.9%	41.2%	41.4%	$X^2_{(2)} = .005$	.997
Guardianship order present	–	2.3%	7.8%	4.5%	Fisher's Exact Test[c]	.459
Medications prescribed						
Anti-psychotic medication:						
- CPZ equivalence, mg ($\bar{x}$, SD)	522.2(359.7)	391.5(212.1)	382.6(322.7)	407.41(292.9)	$K_{(2)} = 2.373$	.305
- Depot prescribed	52.9%	46.5%	43.1%	45.9%	$X^2_{(2)} = .502$	.778
- Clozapine prescribed	29.4%	16.3%	27.5%	23.4%	Fisher's Exact Test[c]	.336
- Number of antipsychotics	1.41(.618)	1.28(.630)	1.31(.678)	1.32(.676)	$K_{(2)} = .756$	.685
Mood stabiliser:						
- Lithium	23.5%	16.3%	5.9%	14.4%	Fisher's Exact Test[c]	.506
- Sodium valproate	11.8%	16.3%	5.9%	10.8%	Fisher's Exact Test[c]	.291
- Other	–	2.3%	7.8%	4.5%	Fisher's Exact Test[c]	.459
Other medication:						
- Antidepressant	29.4%	51.2%	37.3%	41.4%	$X^2_{(2)} = 3.057$	.217
- Benzodiazepine(s)	17.6%	16.3%	5.9%	11.7%	Fisher's Exact Test[c]	.174

[a] *Community-based referral compared to combined acute and sub-acute inpatient referral source.*

[b] *Involuntary treatment includes both Involuntary Treatment Orders and Forensic Order.*

[c] *Unadjusted odds ratio: Guardianship order present = 1.758, Clozapine prescribed = 2.139; Lithium prescribed = 1.545; Sodium valproate prescribed = 2.718; Other mood stabiliser prescribed = 1.758; Benzodiazepine(s) = 3.419.*

TABLE 10 | Diagnosis by cluster.

	Cluster 1 (n = 17)	Cluster 2 (n = 43)	Cluster 3 (n = 51)	TOTAL (N = 111)	Test[b]	p
Primary diagnosis[a]						
F20-29.x Schizophrenia spectrum	82.4%	88.4%	72.5%	80.2%	Fisher's Exact Test[c]	.156
Specific disorders[a]:						
- F20.x Schizophrenia	64.7%	60.5%	64.7%	63.1%	–	–
- F25.x Schizoaffective disorder	17.6%	20.9%	3.9%	12.6%	–	–
- F29.x Unspecified psychosis	–	7.0%	3.9%	4.5%	–	–
- F31.x Bipolar disorder	11.8%	2.3%	13.8%	9.0%	–	–
- F32-34.x Depressive disorders	5.9%	7.0%	5.9%	6.3%	–	–
- Other disorders	–	2.3%	3.9%	2.7%	–	–
Secondary diagnoses/issues						
Current tobacco use	70.6%	65.1%	47.1%	57.7%	$X^2_{(2)} = 4.491$	.106
Substance use	94.1%	32.6%	35.3%	43.2%	$X^2_{(2)} = 21.240$	.000[d]
Physical health issue	11.8%	27.9%	17.6%	20.7%	Fisher's Exact Test[c]	.353
Trauma history	5.9%	2.3%	11.8%	7.2%	Fisher's Exact Test[c]	.207
Anxiety disorder	5.9%	4.7%	15.7%	9.9%	Fisher's Exact Test[c]	.191
Developmental disorder	5.9%	4.7%	13.3%	8.1%	Fisher's Exact Test[c]	.456
Personality disorder	23.5%	4.7%	3.9%	7.2%	Fisher's Exact Test[c]	.042[e]
Obsessive-Compulsive Disorder	–	9.3%	3.9%	5.4%	Fisher's Exact Test[c]	.447

[a] *Test statistic calculated only for the presence/absence of F20-29.x diagnoses (see above) given the number of diagnostic categories*

[b] *For categorical variables, the Chi Square test was applied unless the expected count for any cell was <5, in this case, Fisher's Exact test was calculated*

[c] *Unadjusted odds ratio: F20-29.x Schizophrenia spectrum = 3.628, Substance use = 22.60, Physical health issue = 2.239; Trauma history = 2.943; Trauma history = 3.099; Developmental disorder = 1.513; Personality disorder = 6.082; Obsessive-Compulsive Disorder = 1.787*

[d] *Cells with adjusted standardised residuals ≥+2 = Cluster 1 (Substance use issue – Yes)*

[e] *Cells with adjusted standardised residuals ≥+2 = Cluster 1 (Personality Disorder – Yes)*

DISCUSSION

This study contributes a more comprehensive description of contemporary community rehabilitation unit service users in Australia than has previously been available. Consumers admitted to the CCUs were predominantly males aged in their 30s diagnosed with schizophrenia or related psychotic disorders. Most consumers were born in Australia and had ≤10 years of formal education. Most consumers were referred from community mental health services and had been living with their family before admission. Almost half of the consumers admitted had a current substance use issue, and approximately a quarter had a significant co-morbid physical health issue. Except for current tobacco use, no differences emerged between the study sites on demographic, diagnostic, treatment-related, and consumer-rated variables. However, differences did emerge

TABLE 11 | Clinician-rated measures and sub-scales by cluster*.

	Cluster 1 (n = 17)		Cluster 2 (n = 43)		Cluster 3 (n = 51)		Total (N = 111)		Test	p
	$\bar{x}$(SD)		$\bar{x}$(SD)		$\bar{x}$(SD)		$\bar{x}$(SD)			
Functioning and disability										
HoNOS (Total)	9.00	5.534	13.98	5.755	6.94	3.906	9.98	5.891	$K_{(2)}$ = 35.674	.000^{a}
- Behaviour	1.88	1.409	1.21	1.567	.51	1.255	.99	1.480	$K_{(2)}$ = 21.306	.000^{b}
- Impairment	1.41	1.734	2.40	1.482	1.10	1.237	1.65	1.529	$K_{(2)}$ = 18.997	.000^{a}
- Symptoms	3.65	2.548	4.84	2.468	2.41	1.878	3.54	2.475	$K_{(2)}$ = 21.968	.000^{c}
- Social	2.06	2.384	5.53	3.150	2.92	2.162	3.80	2.957	$K_{(2)}$ = 24.865	.000^{a}
LSP-16 (Total)	8.65	5.219	16.74	5.416	9.33	4.339	12.21	5.945	$K_{(2)}$ = 40.508	.000^{a}
- Withdrawal	1.53	1.218	4.37	1.865	2.18	1.352	2.92	1.882	$K_{(2)}$ = 41.562	.000^{a}
- Self-care	3.59	2.717	5.81	2.119	3.31	1.715	4.40	2.389	$K_{(2)}$ = 30.522	.000^{a}
- Compliance	1.47	1.625	2.49	1.549	1.65	1.494	2.06	1.603	$K_{(2)}$ = 8.697	.013^{c}
- Anti-social	1.18	1.237	1.84	1.717	1.18	1.545	1.45	1.610	$K_{(2)}$ = 4.711	.095
Allen Cognitive Level	4.95	.445	5.00	.389	5.13	.407	5.054	.409	$K_{(2)}$ = 3.714	.156
Social Functioning Scale	104.57	8.183	98.02	7.138	107.82	6.95	103.53	8.469	$K_{(2)}$ = 34.695	.000^{a}
Symptomatic measures										
BPRS-18 (Total)	39.24	8.066	44.33	8.225	32.41	6.885	38.07	9.338	$K_{(2)}$ = 38.473	.000^{b}
- Resistance	5.76	1.954	6.67	2.476	5.04	1.536	5.78	2.129	$K_{(2)}$ = 13.685	.001^{c}
- Positive symptoms	11.29	4.089	12.12	5.399	9.08	3.893	10.59	4.743	$K_{(2)}$ = 9.232	.010^{c}
- Negative symptoms	6.24	2.728	8.63	3.599	5.22	2.648	6.69	3.424	$K_{(2)}$ = 22.763	.000^{c}
- Psychological discomfort	14.94	4.220	15.30	5.040	11.98	4.474	13.72	4.899	$F_{(2,108)}$ = 6.595	.002^{c}
SANS (Total)	45.82	11.706	58.63	14.635	39.41	16.755	47.84	17.561	$F_{(2,108)}$ = 18.616	.000^{d}
- Affective flattening	14.18	7.427	18.67	7.177	11.63	7.997	14.75	8.207	$K_{(2)}$ = 16.675	.000^{c}
- Alogia	3.65	3.040	6.53	4.677	3.24	3.479	4.58	4.203	$K_{(2)}$ = 14.393	.001^{c}
- Avolition/apathy	9.76	2.818	11.88	2.312	8.47	3.797	9.99	3.497	$K_{(2)}$ = 25.374	.000^{a}
- Anhedonia/asociality	13.88	3.295	16.79	3.433	12.61	4.618	14.42	4.420	$K_{(2)}$ = 21.703	.000^{a}
- Attention	4.35	3.081	4.74	3.430	3.47	2.976	4.10	3.202	$K_{(2)}$ = 3.383	.184
Substance use (alcohol)										
AUDIT	23.53	6.983	5.67	6.171	3.88	4.48	7.59	8.823	$K_{(2)}$ = 42.393	.000^{e}

** Differences between clinician-rated measures are a product of the cluster analysis and should not be used to infer true differences between groups (given that these differences provided the basis for group separation). This table is included to illustrate the contribution of sub-scales on which total scores are based to the cluster solution.*

[a] Post-hoc tests with Bonferroni correction for multiple tests identified statistically significant pairwise comparison between Cluster 2 and 1&3.

[b] Post-hoc tests with Bonferroni correction for multiple tests identified statistically significant pairwise comparison between Cluster 3 and 1&2.

[c] Post-hoc tests with Bonferroni correction for multiple tests identified statistically significant pairwise comparison between Cluster 2 and 3 only.

[d] Post-hoc tests with Bonferroni correction for multiple tests identified statistically significant pairwise comparison between Cluster 1 and 2 (p = .013), and Cluster 2 and 3 (p = .000).

[e] Post-hoc tests with Bonferroni correction for multiple tests identified statistically significant pairwise comparison between Cluster 1 and 2&3.

TABLE 12 | Consumer-rated measures by cluster.

	Cluster 1		Cluster 2		Cluster 3		N^{a}	$\bar{x}$(SD)	Test	p
	n	$\bar{x}$(SD)	n	$\bar{x}$(SD)	n	$\bar{x}$(SD)				
MHI-38 (Total)	17	49.88(22.209)	43	51.84(19.848)	51	63.00(17.034)	111	56.67(19.720)	$K_{(2)}$ = 10.445	.005^{a}
Psychological wellbeing		38.53(23.492)		40.00(22.018)		53.31(21.575)		45.89(22.901)	$K_{(2)}$ = 11.118	.004^{a}
Psychological distress		43.41(24.308)		39.26(22.065)		27.12(22.230)		34.32(23.298)	$K_{(2)}$ = 7.836	.020^{b}
STORI-30	16	–	42	–	47	–	105	–	Fisher's Exact Test^{b}	.015^{c}
Moratorium	3	18.8%	9	21.4%	2	4.3%	14	13.3%		
Awareness	7	43.8%	15	35.7%	10	21.3%	32	30.5%		
Preparation	1	6.3%	2	4.8%	6	12.8%	9	8.6%		
Rebuilding	2	12.5%	9	21.4%	7	14.9%	18	17.1%		
Growth	3	18.8%	7	16.7%	22	46.8%	32	30.5%		

[a] Post-hoc tests with Bonferroni correction for multiple tests identified statistically significant pairwise comparison between Cluster 3 and 1&2

[b] Post-hoc tests with Bonferroni correction for multiple tests identified no statistically significant pairwise comparisons

[c] Unadjusted odds ratio: STORI-30 = 17.810; cells with adjusted standardised residuals ≥+2 = Cluster 2 (Moratorium) and Cluster 3 (Growth), cells with adjusted standardised residuals ≤-2 = Cluster 2 (Growth) and Cluster 3 (Moratorium).

between the study sites on clinician-rated measures (AUDIT, BPRS, HoNOS, and SFS total scores). The characteristics of the cohort were generally consistent with those defined under the TRR service type in the systematic review by Parker et al. (1). The CA identified three clusters, with differences emerging between the clusters concerning substance use issues, recovery orientation, and levels of symptomatic and functional impairment. This study corroborates the relevance of the consumer characteristics previously defined under the TRR service type.

Who Uses These Services?

This study provides comprehensive information about consumers admitted to CCUs, including diagnostic, treatment-related, and symptomatic variables. While the primary diagnoses of schizophrenia-spectrum disorders continue to predominate for CCU service users, these occurred less frequently than observed in the modified TRR cohort. This suggests a continuation of the trend towards increased diagnostic heterogeneity of consumers referred to community rehabilitation units identified in the previous systematic review (1). Additionally, the prevalence of substance use comorbidity (44.8%) exceeded that previously identified for TRR type services (21%) (1), and documented in contemporary Australian inpatient rehabilitation services (35–38%) (42, 43). Similarly, the average AUDIT scores in the cohort exceeded the threshold defined for "risky/hazardous drinking". These findings support the assertion that addressing co-morbid substance use issues, and in particular alcohol use disorders, is an increasingly important consideration for community-based residential rehabilitation services (5, 44). Also, approximately one in four (24.1%) consumers in the cohort were identified as having a significant co-morbid physical health issue; this finding supports recent calls for mental health rehabilitation services to attend the physical health needs of consumers (43, 46).

The impact of under-reporting and non-identification of co-morbidities affecting the cohort must be considered. The prevalence of significant physical health issues was less than that identified in the TRR cohort (36.4%) and in a focused audit of all consumers residing in inpatient and community-based rehabilitation services in Queensland completed in 2016 (46). This audit showed that the metabolic syndrome affected approximately half of these consumers (49.4%). Similarly, issues relating to non-identification and under-reporting of trauma need to be considered given the contrast between the prevalence observed in the cohort (9.7%) and the frequency of childhood trauma reported in the 2010 Australian national survey of psychosis (54.2%) (47). It will be informative to observe if these comorbidities are identified more frequently by the time cohort members are discharged from the CCUs (1).

It is likely that state-based variation in the use of guardianship legislation explains the lower rates of guardianship order use in the current cohort relative to the TRR cohort. This assertion is supported by the disproportionate influence of the data from the South Australia Community Rehabilitation Units on the high frequency of guardianship order use identified in the pooled cohort data (1).

Regarding the symptom-related measures, the average total HoNOS score ($\bar{x} = 10.31$) on admission surpassed the threshold for moderate illness severity established by Parabiaghi et al. (48). This average was similar to that observed in Australian samples on admission to inpatient mental health rehabilitation units ($\bar{x} = 9.03\text{-}13.49$) (42, 43), and on a cross sectional assessment of consumers residing at Queensland CCUs ($\bar{x} = 12.7$) (50). Within the clinical assessment battery, both the average total SANS and BPRS scores were also within the ranges approximating Clinical Global Impression-Schizophrenia (CGI-S) scores of 'mildly ill" (50, 51). The finding that consumers are generally assessed to be mildly-to-moderately-ill based on symptom-related measures is consistent with the conceptualization of CCUs as "non-acute" services (52) and indicates that alarmism about the impact of acute-bed pressures on the function of residential rehabilitation services (5) may not be warranted.

Disability, as assessed by the LSP-16 ($\bar{x} = 12.21$), was lower in the cohort than that recently recorded on admission to an Australian non-acute inpatient rehabilitation facility ($\bar{x} = 17.39$) (43). This average was also lower than that recorded cross-sectionally for consumers residing at Queensland CCUs in 2014 ($\bar{x} = 17.5$) (49). Functional assessment using the ACL indicated that on average, admitted consumers are operating at a level permitting "learning new activity" but with the expectation of needing weekly safety checks and problem-solving assistance (53). With regards to social functioning, the average score on the SFS approximated the 50th percentile of the reference group of unemployed community outpatients with a diagnosis of schizophrenia (33). Overall, the scores on these measures indicate that levels of impairment and disability within the cohort are not extreme relative to other people diagnosed with schizophrenia. This finding is consistent with the CCU service models transitional focus, the expectation of skills development for consumers, and the accommodation structure of self-contained, independent living units (1).

The findings also indicate that consumers are admitted to CCUs at very different stages of their recovery journeys. The stages of recovery most frequently occurring within the cohort were "awareness" (30.5%) and "growth" (30.5%). Andresen et al. describe the "awareness" stage as representing "the person's dawning realization of the possibility of a more fulfilling life" (p76) with some acknowledgement of personal responsibility for change. In contrast, the "growth" stage reflects an "ongoing dynamic way of living" (p114) with characteristic features including hope, positive future orientation, a sense of personal responsibility and meaning (54). The finding that more than a third of consumers were in the earliest stages of recovery ('awareness" or "moratorium") is consistent with staff emphasis on readiness to engage as both barriers and clinical challenges in the delivery of recovery-oriented rehabilitation care at a CCU (5). It may be unrealistic to expect consumers in the "awareness" stage to actively engage in available rehabilitation programs without efforts to build their readiness (55). Building readiness to engage in rehabilitation may involve work around self-awareness, self-efficacy and enhancing motivation by linking interventions with consumers' goals (55, 56).

The data-driven approach to classification that applied CA to the clinician-rated assessments identified three sub-groups of consumers within the cohort. Differences emerged between the clusters in terms of the levels of symptomatic and functional impairment, as well as substance use issues and stages of recovery. Consumers assigned to Cluster 1 (15%) were characterized by higher levels of co-morbid personality disorder/traits and substance use issues, including specifically alcohol use. Consumers assigned to Cluster 2 (39%) were characterized by higher levels of disability, negative psychotic symptoms and functional impairment; they were also more likely to be in the "moratorium" and less likely to be in the "growth" stage of recovery. Those consumers assigned to Cluster 3 (46%) had lower levels of general psychiatric symptoms and were more likely to be in the "growth" and less likely to be in the "moratorium" stage of recovery. Awareness of the presence of these profiles has implications for service planning and evaluation. Secondary analysis of discharge and follow-up data, when available, based on these clusters, is expected to be informative in terms of their relevance and implications for practice.

Staff working at CCUs have previously identified deficits in their skills to manage comorbid substance use disorders (5), which are issues that often precipitate premature discharge from care (46). The needs of Cluster 1 type consumers could be better met through enhancing staff skills in the management of substance use disorders. Assertive intervention to address alcohol and other substance use issues at the time of admission may facilitate more rapid stabilization for these consumers. Additionally, addressing personality disorder issues concurrently at the time of admission may enhance the stabilization of this sub-group and their engagement with rehabilitation support. One option to achieve this may be external linkage with therapeutic programs available in the community such as Dialectical Behaviour Therapy (57). However, the applicability of these programs to people with comorbid psychotic disorders has not been adequately considered in the literature (58).

The case complexity and higher levels of disability, characterizing consumers assigned to Cluster 2, align well with the CCU model of service (2). The finding that these consumers are more likely to be in the "moratorium" phase and less likely to be in the "growth" phase of recovery has important implications for planning the initial focus of support. Andresen et al. described the "moratorium" stage of recovery as being characterized by "the loss of hope, relinquishment of responsibility for one's life, loss of a sense of identity and the loss of meaning in life … [contributing to] withdrawal, hopelessness and an apparent lack of motivation" (54) (p53–54). Expecting these consumers to enthusiastically engage with rehabilitation activities at the time admission to the CCU may be both unrealistic and counterproductive. Instead, initial support focused on establishing a sense of hope and expectations of the possibility of recovery is likely to build motivation to engage in rehabilitation activities relevant to their goals (54–56). The higher levels of disability and negative symptoms experienced by Cluster 2 type consumers suggests the relevance of "starting slow" in terms of expectations of engagement. Additionally, these consumers may benefit from a dual focus on skills development as well as mobilization of relevant support to maximize their independence in the community despite the presence of disability.

In contrast consumers assigned to Cluster 3 may be more ready to actively engage with rehabilitation support at the time of the admission. These consumers' growth orientation aligns with the staff conceptualization of "rehabilitation readiness" (5). However, their higher levels of subjective wellbeing combined with lower levels of disability and symptomatic impairment may mean that their rehabilitation needs may not align as well with the intensity and duration of rehabilitation care available at a CCU as other consumers (e.g. Cluster 2). These consumers may benefit from "starting fast" at the CCU with regards to expectations about therapeutic activity engagement and active work on transition planning from the time of admission.

What Is the Impact of an Integrated Staffing Model on Admission Patterns?

There were minimal differences identified between the characteristics of consumers admitted to the three study sites. The absence of differences in demographic, diagnostic (except for current tobacco use) and treatment-related variables between sites suggests that similar consumers are being admitted to the units regardless of the staffing configuration. Site-based variation in the clinical assessment battery was observed concerning the total HoNOS, BPRS, SFS and AUDIT measures. However, the pattern was mixed, with only one of these variables (SFS) showed a significant difference between the clinical staffing model and both integrated staffing model sites. Site-based variability may relate to differences in the acuity of referrals at the time of admission or issues with inter-rater reliability, which was not assessed. Overall, the results support the hypothesis that the introduction of an integrated staffing model did not substantially alter the profile of consumers admitted to the CCUs.

Limitations

These results were derived from a naturalistic observational design, and none of the clinician-rated assessment items were blinded. While orientation was provided to all staff regarding the assessment battery, and training was received by staff in the completion of the routine outcome measures (HoNOS, LSP-16, and MHI-38), inter-rater reliability was not assessed. This may have impacted the reliability of the clinician-rated assessments and the associated comparisons reported between the three study sites. Additionally, most measures in the assessment battery were completed following commencement at the CCU. While the 6-week timeframe applied coincided with the formal assessment period across the sites, the impact of the initial experiences of care cannot be assessed. Qualitative interviews exploring consumers expectations of care completed during this assessment period found positive expectations and favorable comparisons to previous experiences of care and support (20, 1). The effect of the availability of an attractive living environment and the hope for desired "transformation" through receipt of

CCU care may have positively impacted the symptomatic and self-report measures.

Several potentially relevant variables were omitted from the available data. Importantly, the assessment battery failed to focus on several factors relating to the planning of rehabilitation care including consumers' strengths, coping strategies and personal goals (35). Additionally, the perspectives of carers were omitted due to the minimal availability of carer data relative to the size of the consumer cohort. The lack of carer data was driven by the combination of low levels of consumer nomination of carers during the consent process (33.10%), as well as missing data where this consent was provided (18.75%). Carers should be considered a key stakeholder in mental health research (59). Given the high proportion of consumers who had been living with family prior to CCU admission this information would have been informative in understanding the issues contributing to admission to the CCUs.

The generalizability of the results may be limited by the focus on three sites operating within a single health district as well as the approach to statistical grouping within the cohort that was applied. Patterns of referral and admission to community rehabilitation units are likely to be dependent on the mental health and accommodation services array available in the geographic area of interest. The published typology of Australian Community Rehabilitation Units provides a useful reference for considering the generalizability of these findings to other contexts in Australia and internationally (1).

Additionally, the generalizability of CA solutions to wider populations can be limited (8). While CA produces an objective (statistical) grouping, this solution is impacted by the choice of method and the interpretation of the data to identify an optimal solution (7). CA is a hypothesis generating technique. The value of the classification solution to broader decision making about planning the approach to rehabilitation care would be supported by identifying similar clusters within datasets from different sites and TRR service models.

CONCLUSIONS

Consumers admitted to contemporary CCUs are predominantly males, aged in their 30s, diagnosed with schizophrenia spectrum disorders. The characteristics of admitted consumers are similar to those previously defined under the broader TRR cohort. Minimal differences were present in the demographic, diagnostic and treatment-related characteristics of consumers referred across the study sites. While some variation was present in the clinician-rated measures of the clinical assessment battery, there was no clear pattern to suggest that the introduction of an integrated staffing model meaningfully affected the characteristics of consumers admitted for rehabilitation care. The three sub-groups identified through CA were differentiated by the presence of comorbid substance use and personality disorder issues, levels of disability and symptoms, and recovery stage. This classification has potential implications for the planning of rehabilitation care.

DATA AVAILABILITY STATEMENT

The datasets generated for this study will not be made publicly available. Availability of the datasets associated with this research is limited by ethical approval obtained and would require application for approval to release through the relevant HREC.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by University of Queensland and Metro South Human Research Ethics Committees (HREC/14/QPAH/62). The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

DH: Provision of expertise and guidance to support the completion of the cluster analysis; review of iterative drafts of the manuscript. DS: Advisory support to SP, including guidance around the study design and process; review of iterative drafts of the manuscript. FD: Content expertise concerning Community Rehabilitation Units; involvement in study design and review of iterative drafts of the manuscript. GM: Review of iterative manuscript drafts; guidance around presentation and analysis of data. HW: Advisory support to SP, including guidance around the initial concept and scope, and methodology; review of iterative manuscript drafts. MH: Advisory support to SP, including guidance around the study design and process, preparation and presentation of data, and interpretation of findings; review of iterative drafts of the manuscript. NK: Contribution to study concept and design; coordination of data collection at one of the study sites; review of iterative drafts of the manuscript. SP: Coordination of the research team; contribution to study concept and design; data collation and analysis; collaborative drafting of the initial manuscript, including identification of key findings and manuscript structure; redrafting manuscript in response to feedback from members of the team. UA: Review of iterative manuscript drafts; guidance around presentation and analysis of data.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyt.2019.00798/full#supplementary-material

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From Residential Care to Supportive Housing for People With Psychiatric Disabilities: Past, Present, and Future

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For centuries, treatment and accommodation for people with significant mental health conditions in many countries, including the United States, have been viewed as necessarily inseparable elements, first in asylums and then, with deinstitutionalization, in community care models. The advent of psychiatric rehabilitation and later, recovery, helped to shift the paradigm of mental health services and the role of housing, to one focused on promoting the ability of individuals to achieve not only a life *located in* the community, but one that reflects a meaningful life as *part* of a community. In this context, supportive housing emerged as a model based on integrated, permanent, affordable housing, selected by the person, with flexible supports that are functionally separate, but available as needed and wanted. This model of housing has been predominant in American mental health services for over 20 years, and evidence now exists for its outcomes in terms of housing stability, symptom reduction, and psychosocial variables. Current challenges, both at the societal and the individual level, confront the sustainability of supportive housing, with some efforts being made by housing groups to address these challenges. This article reviews the evolution of supportive housing and its basic tenets, identifying the challenges and some efforts to address them. In addition, the article discusses the current social and economic climate, which appears to be shaping opposing trends, and makes a call to action, to mitigate the possible risks to the future of this value-based housing approach.

Keywords: supported housing, serious mental illnesses, recovery, psychiatric rehabilitation, supportive housing, implementation challenges

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INTRODUCTION

Access to shelter is a right enshrined in the International Convention on Human Rights (1). Beyond being a basic right, housing contributes to a sense of identity and community for most people (2, 3). For at least the past 200 years, mental health and rehabilitation treatment providers, advocates, and government entities alike have struggled to provide places to live for people with significant mental health conditions. Adults with significant mental health conditions[1] have often encountered barriers

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[1] This article uses "people first" language, with terms such as "people with significant mental health conditions," "people in mental health recovery," "people with psychiatric disabilities" interchangeably, to refer to individuals who live with challenges often described as "serious mental illnesses" of two or more years duration, and psychiatric symptoms that impair living, learning or working in a valued societal role Common diagnoses associated with people in this group include: schizophrenia, bipolar illnesses, and other psychotic illnesses; chronic depression etc.

ranging from, but not limited to, discrimination, poverty, a paucity of available housing, lack of supports oriented to their recovery and social isolation when trying to succeed in living with family or in another residence.

This article presents the experience of the American response to the question of housing for people with significant mental health conditions, to highlight the need for continued vigilance and efforts to expand and sustain supportive housing, in the face of current challenges and potential retrenchment.

Evolution of the US Perspective

The major historical milestones underpinning our current beliefs about community living for people with psychiatric disabilities include the establishment of hospitals, deinstitutionalization, the development of community care, and the emergence of rehabilitation and recovery approach to services.

Hospitals as Housing

As occurred in most high income countries, the 18th and 19th Century American response to dealing with significant mental health conditions, was to segregate the population, whether in almshouses, as was done in Colonial America, or in "asylums" (4). Both in France and in America, the idea of "moral treatment" emerged during the Age of Enlightenment. In France, the psychiatrist Pinel established asylums to cure mental illness using this approach. In America, the Quakers or "the Society of Friends," similarly established the first private psychiatric hospital, i.e., "The Friends' Asylum for the Relief of Persons Deprived of the Use of Their Reason," in 1813. Their basic religious tenets included the belief that God dwelt in every person, and therefore, all individuals should be treated equally and with respect. Moral treatment included everything from exercise and religious training, to lessons on good hygiene and activities tailored to each person's interests, such as writing or music (4, 5), and was based on the principle of creating a therapeutic environment in which housing and compassionate support was integrated in one place. Unfortunately, most of these ideals did not endure long. Over the following century, these small rural retreats evolved into over-crowded, publicly-operated institutions with their function transitioning from the promotion of healthy living, to one of reducing perceived community risk, through intense supervision (6).

Deinstitutionalization and Community Care

By the 1950s, there were approximately 560,000 individuals living in psychiatric hospitals in the United States (5). Public exposure to the deplorable conditions in state hospitals in the 1950s, the rise of new psychotropic medications, and the emergence of various civil rights movements in the 1960s led to a demand for the transfer of long stay inpatients to the community, as was eventually policy in most high-income countries (7). In the United States, the inpatient census fell approximately 76% by the 1980s, with 130,000 people remaining as inpatients at that time (8).

As state hospital use was reduced in favor of community care, the issue of where people with significant mental health conditions would reside gained prominence. Negative neighborhood reactions in response to publicized increases in homelessness, was also associated with deinstitutionalization in other countries to varying extent (9, 10). The earliest housing models developed in response to deinstitutionalization, retained a belief in integrating accommodations and treatment. These residential care and treatment models were usually highly structured, long-term care facilities, such as group homes (i.e., multiple residents living in a structured environment with 24 hour supervision); board-and-care homes (homeowners paid to provide food and lodging for one or more individuals) and halfway houses (i.e., group homes intended to be an interim residence between inpatient hospitalization and more independent living). Residents were expected to follow house rules designed to promote transition to less intensive services. Gradually, a "linear" residential model or a "continuum of care" system developed in the late 1970s and 1980s, in which a person was to progress from the hospital, through halfway houses, group homes, and finally, supervised apartments (11, 12).

Rehabilitation and Recovery

It became clear, however, that many such residential care and treatment homes did not, in fact, help individuals gain control over their own lives. A seminal article (13), asked the question "Halfway homes: halfway to where?". It noted that, contrary to the original intent of moving people out of institutions, smaller versions of highly supervised, regulated, and to a large extent, segregated residential environments trapped residents in a kind of trans-institutionalization, a development also seen in European countries (14). Similar research on the shortcomings of this model led to a move away from a linear residential model to the emergence of the U.S. Federal Community Support System (CSS), which identified the need for more than just physical housing or symptom reduction services for people to achieve true community integration (15). The CSS made explicit that services needed to support people with significant mental health conditions' societal goals, such as jobs, school, a life partner, and health. The model mandated 10 distinct services to achieve these objectives, e.g., dental care, rehabilitation, treatment, case management, etc.

Psychiatric rehabilitation, using a biopsychosocial/social disability model (16) emphasized an ecological approach or a "person-environment fit." It evolved as a service to help people develop the skills and supports they needed for the kind of goals they themselves wanted. Psychiatric rehabilitation also made choice a central feature of its process and provided structured interventions to help individuals make their aspirations and choices a reality (17–21). Housing goals were seen as a matter of preference rather than a function of performance level, or category of illness. Services began to be separated from residences, focusing on helping people develop the ability to achieve these goals. The radical concept that a "home is just a home" promoted "real world" places and activities (e.g. sports arenas, banks, public buses), as more appropriate venues for skill development, in order for people to gain greater independence (12, 22).

First-person accounts (e.g. (23) and longitudinal studies (e.g. (24) led to the acknowledgment of the possibility of recovery or achieving a meaningful life, despite symptoms or illness (e.g. (25, 26), an idea gradually accepted internationally (26). In the United States, recovery emerged as a vision for services in the 1990s, strengthening the importance of including individuals with "lived experience" of mental illnesses in designing, delivering, and evaluating services, paving the way for the development of a peer workforce (27, 28). The 1980s humanitarian idea of housing as more than a location for treatment (e.g. (29), was eventually confirmed. Research began to suggest that it was a critical pathway for recovery by providing a sense of "place" for "being, doing, becoming, and belonging" in a community (30).

Earlier beliefs in the importance of a residential continuum required people to move based on functioning, but were now understood to result in lost relationships and fragmentation of communities (17) and thus counter-productive to people's recovery. The recognition that housing was a key factor in promoting social inclusion and citizenship (31, 32) led to housing models that incorporated these aspects of daily life. As a result, permanent, affordable housing paired with flexible, user-driven supports is now the prevailing model of high-quality permanent supportive housing (PSH) in the United States.

What Is Supportive Housing in the United States?

Studying mental health-supported accommodations is hampered around the world by a confusion of terms[2] and characteristics, such as models, physical structures, and recovery focus (33, 34). A recent effort to create a taxonomy identified at least five different international types varying along dimensions of staffing location, level of support, permanence, physical setting (35). The US PSH models have two essential components: 1) housing is permanent, not transitional; 2) supportive services are not required of the tenant to live there (36). Supportive housing typically mirrors the tenant rules and expectations of any standard housing type, in which leases and standard house rules define the expectation of both the tenant and landlord. Housing itself is seen as the platform for personal growth and having a stable home directly impacts one's physical and mental health (37, 38). To enhance community integration, PSH providers have added housing features such as computer centers, urban farms, and exercise rooms, along with services, such as case management, peer support, and others (30).

The basic principles of US supportive housing include (39):

- The individual owns the housing/has a lease in his or her own name;
- Housing is integrated into the community;
- Housing is affordable (i.e. no more than 40% of adjusted gross income);
- Services offered are not a condition for tenancy.

The most frequently studied PSH supportive housing program model is "Housing First," originally designed for homeless individuals with the most complex behavioral health conditions. Housing First provides individuals with immediate access to housing, regardless of their functioning or use of substances; client choice is emphasized in every aspect of treatment, with a harm reduction approach to substance abuse (40). Along with solid evidence for housing retention and stability and appropriate use of clinical services over time, there is some, albeit inconsistent evidence, that this approach is also associated with improvement in symptoms, quality of life, and social functioning [e.g. (41)]. An international systematic review of supportive housing indicates that people who have moved out of long-term psychiatric hospitals to such housing programs, demonstrate improvement or non-deterioration in psychiatric symptoms, social functioning, and reduced rates of rehospitalization (42). Supportive housing outcomes for individuals of the "post deinstitutionalization era" (i.e., those who never had extended hospital stays) are more mixed due to the complexity of designing these studies and the few absolute numbers of these studies to date.

Challenges in Supportive Housing

Access to safe, secure housing has been acknowledged as a critical element in the recovery process for more than 20 years. The practicalities of building and managing housing with recovery-oriented services, however, have presented serious challenges in sustaining and expanding its availability. Challenges include staff capacity to deliver recovery-oriented support, housing affordability, and the effects of race and discrimination among others.

Staff Capacity to Promote Recovery

A major challenge to implementing PSH has been the providers' ability to shift paradigms of service from control, risk reduction, and chronic illness, to the foundational elements of supporting choices, the development of new skills, health, and wellness. Navigating the boundaries of staff input versus personal choice for example, has always been difficult in mental health services (43), but especially in supportive housing programs where the emphasis is on maintaining a home, rather than a treatment setting. Vestiges of the historical institutional framework are still apparent in many supportive housing programs, such as restrictions on visitation in the homes, requirements for medication oversight that mix treatment services with the housing service, the inclusion of service staff in landlord-tenant relationships, or the segregation of residents by including only people with disabilities as tenants. Further complicating this problem is the lack of sustainable funding to attract qualified people and provide them with ongoing training, or advancement opportunities to retain experienced staff. Without the consistent capacity to provide recovery-oriented support services, PSH can easily become a locus for mini-institutions in the community, instead of homes for people who are part of their communities.

Housing Affordability

Permanent supportive housing also needs an affordable housing stock to draw from. During the early deinstitutionalization

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[2] Terms, such as "floating outreach," "supported accommodation," "supportive housing," "housing with supports," have all been used in international literature almost interchangeably. We use the term "permanent supportive housing" (PSH) to mean a specific model of the general category as described in the text.

period, ex-patients had access to government income support that often provided enough to rent rooms in the housing market of the 1970s, albeit usually in the least desirable units available. Eventually, however, even these low cost housing resources were lost to the effects of gentrification and urban renewal. In New York City alone, it is estimated that over 100,000 low cost units were lost during the 1980s (44).

The lack of affordable housing is an ongoing growing issue that affects the American general population. The average cost of housing in the most expensive cities (e.g. Los Angeles, New York, Boston), has increased by 224% since 2000 (45), with a significant increase in the number of renters paying more than 50% of their income (46, 47). Increased costs and lack of income growth push already vulnerable and marginalized people, like those with psychiatric disabilities, into shelters and homeless encampments.

Discrimination and Race

Prejudice against individuals with psychiatric disabilities, diminishes their social capital, adding even tighter limits on the kinds of housing choices people can make. Despite laws against housing discrimination, landlords or neighborhoods are often resistant to people in mental health recovery as residents, reducing an already small pool of available options (48–50). The discrimination affects African Americans disproportionately, so that they comprise approximately 40% of homeless individuals, even though this population represents only 12.5% nationally (51). It is estimated that up to 50% of those who are homeless both in Western Europe and North America, have significant mental health issues (52).

DISCUSSION

The American experience may provide an optimistic, albeit cautionary tale about sustaining supportive housing. On the one hand, it is a well-established service in the array of U.S. mental health service systems, with documented outcomes for homeless and deinstitutionalized populations, as well as moderate but growing evidence of effectiveness for other groups with mental health conditions (53).

A systematic review of the international literature has suggested that supportive housing programs with a high degree of tenant satisfaction and stability have empathic staff who are expert in those psychiatric rehabilitation techniques which support informed choice and community participation (54). Such training in psychiatric rehabilitation techniques is now readily accessible through membership groups, such as Psychiatric Rehabilitation Association (https://www.psychrehabassociation.org), or training entities, such as the Center for Psychiatric Rehabilitation (https://cpr.bu.edu/develop) among others. These focus on teaching providers and supervisors how to support informed choice while engaging the person's own expertise to learn to live as members of the community.

Even the most highly trained and experienced staff can encounter difficult situations when supporting people with complex needs. Turnover among experienced staff may leave an organization with newer, less trained staff. Organizations have to be structured to respond in ways consistent with core recovery values (i.e., services that are person centered, in full partnership with peers, based on choice and hopefulness (27)), even when staff cannot. Cross disciplinary tools to promote recovery oriented services are available (e.g. Recovery Promoting Competencies' Toolkit, www.cpr.bu.edu/develop), as well as discipline specific tools (e.g. SAMHSA's Recovery to Practice curricula, https://www.samhsa.gov/recovery-to-practice/rtp-curricula). These address not only workforce development needs, but also provide tools that can support the fundamental reimagining of an organization's culture including mission, values, and personnel practices often required to deliver such services (23, 55, 56).

Efforts to expand options by overcoming the challenges of housing affordability for people with psychiatric disabilities have been underway in some states. Early advocacy efforts in New York, for example, helped to establish a "right to shelter" for homeless people as a government obligation. The obligation resulted in guaranteed financing that produced more than 40,000 supportive housing units since the 1990s (www.shnny.org). More recently, California created a special task force to address the state's homelessness epidemic and pledged to finance 3.5 million new housing units by 2025. These examples point to a growing understanding of the need for long-range planning and sustained commitment by government to finance the building and maintenance of supportive housing.

Another approach seeks to maximize participant choice in finding housing, by providing individuals with an annual housing and services allotment that they can spend anywhere within a proscribed set of guidelines. Known variously as "self-directed care" or "self-directed services," research findings suggest that it has superior client outcomes and greater satisfaction with mental health care, compared to services as usual (57).

On the other hand, it is difficult to be as optimistic about the U.S. capacity to address ongoing discrimination. Issues such as gun violence and domestic terrorism have created a climate in which even the U.S. President (41) erroneously identifies people with mental illnesses as the cause (e.g. (58, 59). Fear-based responses to social issues have led to initiatives seeking greater societal control over choices made by people with significant mental health conditions that threaten the basic precepts of supportive housing (e.g. (60). This has rekindled old debates about the balance between reducing perceived risks to society and personal civil liberties.

The array of challenges to PSH are currently counter-balanced by efforts to increase the number of housing units, the growing variety of training, and tools to deliver recovery-oriented supports and funding innovations, such as self-directed care. Advocates and researchers alike, however, need to continue developing the case for PSH based in a recovery orientation as an essential component of the healthcare system. Access to permanent housing that is a home rather than a housing facility, must be expanded. Otherwise, people with significant mental health conditions are in danger of continuing to be overrepresented in our jails, shelters, and emergency rooms and living segregated lives in, not *of* their communities. Future sustainment requires both advocacy and more nuanced research to clearly identify and embed those features of supportive housing that produce the most tangible improvements in a person's well-being and, by extension, the economic and social value that well-being can bring to the community as a whole.

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Both authors generated the important ideas included in the outline. SC contributed particularly to the *Challenges* section, as well as reviewing and editing draft manuscripts. MF wrote the majority of the article and finalized the manuscript.

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Housing Stability and Neurocognitive Functioning in Homeless Adults With Mental Illness: A Subgroup Analysis of the At Home/Chez Soi Study

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Objective: This study examined the association of housing stability with neurocognitive outcomes of a well-characterized sample of homeless adults with mental illness over 18 months and sought to identify demographic and clinical variables associated with changes in neurocognitive functioning.

Method: A total of 902 participants in the At Home/Chez Soi study completed neuropsychological measures 6 and 24 months after study enrollment to assess neurocognitive functioning, specifically verbal learning and memory, cognitive flexibility, and complex processing speed. Multivariable linear regression was performed to assess the association of housing stability with changes in neurocognitive functioning between 6 and 24 months and to examine the effect of demographic and clinical variables on changes in neurocognitive functioning.

Results: Overall neurocognitive impairment remained high over the study period (70% at 6 months and 67% at 24 months) with a small but significant improvement in the proportion of those experiencing more severe impairment (54% vs. 49% $p < 0.002$). Housing stability was not associated with any of the neuropsychological measures or domains examined; improvement in neurocognitive functioning was associated with younger age, and bipolar affective disorder at baseline.

Conclusions: The high prevalence and persistence of overall neurocognitive impairment in our sample suggests targeted approaches to improve neurocognitive functioning merit consideration as part of health interventions to improve everyday functioning and outcomes for this population. Further efforts are needed to identify potential modifiable factors that contribute to improvement in cognitive functioning in homeless adults with mental illness.

Keywords: homelessness, mental illness, neurocognitive functioning, intervention, neurocognition, housing stability

INTRODUCTION

Homelessness continues to be a significant social and health concern in North America. Individuals experiencing homelessness have higher rates of serious mental illness (SMI) and substance use than do those who are stably housed (1) and are at increased risk of chronic medical conditions (2) and premature mortality (3, 4). Furthermore, an emerging body of evidence suggests that up to 80% of people experiencing homelessness demonstrate lower than average neurocognitive functioning (5–8), including deficits in learning and memory, attention, speed of information processing, general intellectual functioning, and executive functioning (6–10). Low or impaired cognition may precede and contribute to homelessness, may be a consequence of homelessness and the poor health it entails (7, 11), or both. Cognitive impairment among people experiencing homelessness may be attributable to conditions such as mental illness, substance misuse, traumatic brain injury, and neurological and developmental disorders, among others (5, 7, 10, 11). Deficits in cognition may also arise from factors related to homelessness, including malnutrition, chronic stress, and inadequate healthcare (7). Regardless of the cause, the presence of low or impaired neurocognitive functioning among individuals experiencing homelessness and SMI has important clinical and service planning implications, as these individuals may have greater difficulties following treatment regimens, navigating the healthcare and social service systems, and participating in activities that may improve overall quality of life (12). Indeed, previous research indicates that neurocognitive functioning plays a major role in functional outcomes in this population (13, 14), as deficits in learning, memory and cognitive flexibility may impact ability to manage medications, financial matters, and negotiate complex routines and activities of daily living, including housing issues.

Prior research has also begun to examine whether neuropsychological (NP) performance may change over time as homeless individuals experience improvements in health or social circumstances, such as better nutrition, less perceived stress, and improved ability to address physical and mental health conditions. Medalia, Herlands and Baginsky (15) found that neurocognitive functioning among a small sample of formerly homeless individuals with a history of chronic mental illness, substance abuse, or both (n = 12), improved after participating in a cognitive remediation program within a supportive housing program. Seidman et al. (16) reported that after 18 months, the provision of supported housing (group homes or independent apartments) resulted in modest improvements in overall neurocognitive functioning, verbal memory, and motor speed and sequencing among homeless persons with SMI. A follow-up to this study found that gains in neurocognitive functioning after housing could be maintained after 48 months, and the presence of substance abuse might diminish the beneficial effect of housing on neurocognitive outcomes (17). These studies had several limitations, however, including moderately sized samples, and lack of a homeless comparison group.

Given the paucity of research in this area, the primary objective of this study was to examine the association between housing stability and neurocognitive functioning over 18 months in a large, well characterized sample of homeless adults with mental illness. Based on prior research, we hypothesized that housing stability would be associated with improvement in neurocognitive performance over 18 months. The secondary goal was to examine factors associated with potential changes in neurocognitive functioning in this population. An enhanced understanding of factors associated with changes in neurocognitive functioning may help identify subgroups of homeless adults that may benefit from additional interventions to improve their neurocognitive performance and optimize functional outcomes.

MATERIALS AND METHODS

This is an secondary data analysis of data collected during the At Home/Chez Soi study, an unblinded, randomized field trial examining the effect of Housing First (HF), compared to "treatment as usual" (TAU), in five cities across Canada (Vancouver, Winnipeg, Toronto, Montreal, and Moncton) [see published study protocol (18)]. The parent study was registered with the International Standard Randomized Control Trial Number Register (42520374) and was approved by the research ethics boards of all participating institutions. All participants gave written informed consent.

Participants and Recruitment

At Home/Chez Soi eligibility criteria included legal adult status (≥18 years old, ≥19 years in Vancouver), the presence of mental disorder with or without co-existing substance use disorder, not currently being served by an assertive community treatment or intensive case management program, and being absolutely homeless (lacking regular, fixed physical shelter for at least the past seven nights) or precariously housed (e.g. living in single room occupancy, rooming house, or motel with a history of absolute homelessness in the past year). Exclusion criteria included: no legal status as a Canadian citizen, landed immigrant, refugee or refugee claimant; and relative homelessness (inhabiting spaces that did not meet the basic health and safety standards, such as living in overcrowded or hazardous conditions). Participants were enrolled in the At Home/Chez Soi study from October 2009 to July 2011. Participants were referred to the study from various community agencies that serve homeless people, including shelters, drop-in centers, inpatient programs, street outreach teams, mental health teams and criminal justice programs. In addition, researchers attended drop-in centers, shelters, and locations frequented by people who are homeless, to facilitate recruitment through self-referral.

At Home/Chez Soi Study

At Home/Chez Soi participants were stratified at baseline into high and moderate needs groups based on their need level for mental health services (18). High-needs participants were identified as having: i) a Multnomah Community Ability Scale (19) score of 62 or lower and ii) a Mini International Neuropsychiatric Interview 6.0 (MINI 6.0) (20) diagnosis of current psychotic disorder or bipolar disorder (or an observation of psychotic behavior), and one of the following criteria: two or more hospitalizations for mental illness in any one year of the past 5 years, comorbid substance use, or recent arrest/incarceration. Moderate-needs participants were identified as all others who met eligibility criteria but were not identified as high needs. Description of the study and primary outcomes is provided in detail elsewhere (18, 21, 22). In brief, participants in the HF intervention groups received a rent supplement, along with services from either an Assertive Community Treatment team or an Intensive Case Management team, depending on their need level. Participants assigned to the TAU group had access to usual housing and mental health support services in their respective communities, which varied by site but could include access to case management or supportive housing.

Study Measures

Neurocognitive functioning was assessed using a brief NP test battery, administered at the 6- and 24-month visits by trained research interviewers, assessing NP domains shown to be detrimentally affected among homeless adults (learning and memory, cognitive flexibility, and complex processing speed) (6). Due to the lengthy baseline interview and potential burden to participants (and consequent fatigue), NP testing was conducted at 6 and 24 months after study enrolment. Our clinical and field experience and research in this area suggest that cognitive changes are unlikely within a 6-month timeframe in the context of a housing intervention implemented over several months after study enrolment (although this is a potential factor we return to in our discussion as a limitation). Research coordinators received extensive training and supervision in the administration and scoring of the NP tests utilized. Verbal learning and memory was assessed with the Hopkins Verbal Learning Test–Revised [HVLT-R (23)]; processing speed was assessed with the Trail Making Test, Part A and B (TMT-A/B) (24) and the Digit Symbol Coding Subtest of the Wechsler Adult Intelligence Scale–Revised (WAIS-R) (25). The Trail Making Test, Part B (TMT-B) was also considered and examined as a measure of cognitive flexibility (24). The primary outcome variables were the difference between 24- and 6-month scores for the following NP measures: overall NP functioning domain *z*-score (all measures, standardized but uncorrected for age, education, and race) as well as verbal learning and memory subdomain z-score and complex processing speed and cognitive flexibility subdomain z-score (see *Statistical Analysis* section below for details).

Housing stability was assessed using the Residential Time Line Follow Back (RTLFB) inventory (26), administered by study personnel every three months. The RTLFB includes prompts and calendars to determine housing history, moves, and type of residence during a given period. Stable housing was considered as living in one's own apartment, room, or house (or else with family) with an expected residency of at least six months or tenancy rights. Housing stability was measured as the percentage of days stably housed, calculated by dividing the total number of days spent in stable housing by the total number of days for which any type of residence data was available over the 24-month study period.

Other study measures included current mental and substance use disorders, assessed at the baseline interview using the Mini International Neuropsychiatric Interview 6.0 (MINI 6.0) (20), as well as sociodemographic characteristics, homelessness history, and comorbid medical conditions, also assessed at baseline using a series of self-reported questionnaires.

Statistical Analysis

Of 1,326 study participants with both 6- and 24-month NP data available (participants from the Vancouver site were excluded as this site did not assess 24-month NP functioning), 902 participants were included in the analyses. To ensure data validity, participants were excluded if they were unable to complete the 6- or 24-month interviews and/or showed signs of drug or alcohol intoxication during the interview, or if they completed the interview more than 6 months past the scheduled interview date (n = 344). Participants with incomplete or missing NP data (e.g. missing data for multiple tests) were also excluded from the analyses (n = 80). We further examined whether those who were not able to complete testing, and those with missing values, differed from those who completed both assessments as per study protocol. Our analysis suggests that there were no major factors affecting the generalizability of our findings to the entire sample.

Raw scores of NP tests at 6 and 24 months were first converted into z-scores by subtracting the sample means and dividing by the standard deviation to normalize scores and enable comparisons. An overall NP *z*-score was created by averaging *z*-scores of the five NP measures (TMT-A, TMT-B, WAIS-R Digit Symbol, HVLT-R Total Recall, and HVLT-R Delayed Recall). We also examined the main neurocognitive domains or factors assessed by the five NP tests administered. To identify these factors empirically, we conducted a principal components analysis (27), and based on these findings we created two subdomain summary scores, i.e. verbal learning and memory domain (HVLT-R Total Recall and HVLT-R Delayed Recall) and complex processing speed and cognitive flexibility domain (WAIS-R Digit Symbol, TMT-A, and TMT-B). Summary *z*-scores for each domain were then generated by averaging *z*-scores of individual tests in each of the two domains. Changes in neurocognitive performance scores were calculated as the difference between 24- and 6-month scores for each outcome. Positive changes indicated neurocognitive outcomes improved at 24 months. Paired t-tests were used to compare neurocognitive performance scores at 24 and 6 months. We used ANOVA tests to compare adjusted means for summary *z*-scores between 24 and 6 months, and included a number of covariates.

To determine presence (and rate) of overall neurocognitive impairment of study participants, raw scores of NP tests were converted into demographically corrected *T*-scores using published norms for age, education, and sex (28, 29). *T*-scores were, in turn, converted into deficit scores ranging from 0 (normal), 1 (mild impairment), 2 (mild to moderate impairment), 3 (moderate impairment), 4 (moderate to severe impairment), to 5 (severe impairment) following Carey et al. (28). Deficit scores of individual tests were then averaged to calculate a Global Deficit

Score (GDS). A GDS cut-off of 0.5 or greater has been validated as a cut-off point to define "overall" neurocognitive impairment and balance sensitivity and specificity (15%). This validated cut-off indicates that an individual demonstrates, on average, at least mild impairment on half of the measures of the NP test battery (28) and this cut-off mirrors the level considered to be "clinically significant" in formal NP assessments and determination of "mild" cerebral dysfunction.

Descriptive statistics were calculated for each variable of interest. Next, multivariable linear regression models examined the associations between all NP outcomes at 24-month and housing stability, age at study entry, gender (female vs. male), education (high school or higher vs. less than high school), length of homelessness (≥3 vs. < 3 years), first language (other vs. French or English), race (Indigenous, Black, Other, vs. White), study site (Moncton, Montreal, Winnipeg vs. Toronto), need level (high vs. moderate), current alcohol abuse or dependence (yes vs. no), substance abuse or dependence (yes vs. no), psychosis (psychotic disorder or mood disorder with psychotic features) (yes vs. no), major depressive disorder (yes vs. no), post-traumatic stress disorder (yes vs. no), and bipolar affective disorder at study entry (yes vs. no), adjusting for the outcome score at 6 months. All variables were chosen based on prior research (5, 7, 8, 11) and were entered into the model simultaneously. Pearson's correlation matrix and variance inflation factors were calculated for each variable with the latter well below the generally accepted cut-off of 5.0.

We conducted additional analyses examining the changes in performance (*z*-score) on all NP outcomes for the subgroup of participants with more significant neurocognitive impairment (GDS ≥1.0), using the same regression models described above.

We used the Imputation and Variance Estimation Software IVEware version 0.2 (The University of Michigan, 2002) to conduct imputations for missing values for the TMT-B test at 24 months (n = 69, 7.6%). This software applies the sequential regression imputation method to perform imputations. We performed a single imputation (with 10 iterations) due to the low amount of missing data, using a stochastic linear regression with random perturbations to estimate TMT-B scores at 24 months with the following variables as predictors: Age, gender, education, race, language spoken at home, and NP scores at 24 months for the remaining four tests (i.e. TMT-A, HVLT-R Total Recall, HVLT-R Delayed Recall, WAIS-R Digit Symbol).

We defined statistical significance at a p value of 0.01 or less for two-tailed tests. No adjustment for multiple testing was applied (30).Statistical analyses were conducted using SAS 9.3 (SAS Institute Inc., 2011) and SPSS 20.0 (IBM Corp, 2011).

RESULTS

Table 1 summarizes the sample baseline demographic and clinical characteristics. Half the sample was White (51%), one third (32%) were females, and the mean participant age at enrollment was 41.3 years (SD = 10.8). Half the sample had a lifetime duration of homelessness of more than three years (50%). Most prevalent mental disorders included major depressive disorder (55%), substance abuse or dependence (52%), and alcohol abuse or dependence (48%) (**Table 1**). The proportion of participants demonstrating overall neurocognitive impairment (using GDS ≥0.5) remained high over the study period [70% at the 6-month visit and 67% at the 24-month visit (*p* = 0.089)] (see **Table 2**). Similarly, the proportion of participants with more significant neurocognitive impairment (GDS ≥1.0) remained high over the study period although there was a modest and statistically significant decrease over time, from 54% to 49%, respectively (*p* = 0.002*)*. Performance on two of the individual NP tests, TMT-A and TMT-B, showed statistically significant improvement over time (**Table 2**). Adjusted means for changes in each cognitive score from 6 to 24 months are presented in **Supplemental Table 1**.

TABLE 1 | Baseline sample characteristics (n = 902).

	n	(%)
Demographic variables		
Age in years		
18–24	70	(7.8)
25–29	82	(9.1)
30–34	111	(12.3)
35–39	112	(12.4)
40–44	136	(15.1)
45–49	173	(19.2)
50–54	135	(15.0)
55+	83	(9.2)
Female	290	(32.1)
High school education or higher	442	(49.0)
First language English/French	167	(18.5)
Race		
Indigenous	193	(21.3)
White	456	(50.5)
Black	119	(13.1)
Other	134	(14.8)
Study site		
Moncton	91	(10.0)
Montreal	310	(34.3)
Winnipeg	245	(27.1)
Toronto	256	(28.3)
Housing variables		
Lifetime homelessness ≥3 years	454	(50.3)
Clinical variables		
Housing first intervention	543	(60.2)
High need	280	(31.0)
Alcohol abuse or dependence	434	(48.1)
Substance abuse or dependence	468`	(51.8)
Psychosis	389	(43.1)
Major depressive disorder	496	(54.9)
Post-traumatic stress disorder	262	(29.0)
Bipolar affective disorder	102	(11.3)
Cognitive performance (at 6 months)		
Overall neuropsychological functioning *z*-score, mean (SD)	0.01	(0.75)
Verbal learning and memory subdomain *z*-score, mean (SD)	0.01	(0.94)
Complex processing speed and cognitive flexibility subdomain *z*-score, mean (SD)	0.01	(0.84)

SD, standard deviation.

Multivariable Regression Analyses

Housing stability was not associated with any of the neurocognitive outcomes examined (**Table 3**). Older age was associated with

TABLE 2 | Neuropsychological test scores at 6- and 24- month assessments (N = 902).

	6 months	24 months	*P*-value*
Raw Scores (mean, SD)			
HVLT-R total †	19.8 (5.7)	19.9 (6.7)	0.645
HVLT-R delayed†	6.7 (2.8)	6.7 (2.8)	0.865
WAIS-R Digit Symbol†	41.7 (12.5)	41.9 (12.6)	0.574
Trail A‡	43.4 (20.4)	40.0 (17.6)	**<0.001**
Trail B ‡§	109.3 (58.5)	100.3 (50.0)	**<0.001**
***T*-Scores (mean, SD)**			
HVLT-R total †	35.0 (10.8)	35.2 (11.5)	0.551
HVLT-R delayed†	37.5 (11.4)	37.6 (11.4)	0.675
WAIS-R Digit Symbol†	43.7 (10.0)	44.2 (10.0)	0.018
Trail A‡	39.8 (12.0)	42.4 (11.8)	**<0.001**
Trail B ‡§	42.0 (11.6)	44.0 (11.9)	**<0.001**
Global Deficit Scores			
Score (median, IQR)	1.0 (0.4–1.8)	0.8 (0.4–1.6)	
Any impairment ≥0.5 (%)	628 (69.6%)	602 (66.7%)	0.089
Severe impairment ≥1.0(%)	483 (53.6%)	438 (48.9%)	**0.002**

HVLT-R, Hopkins Verbal Learning Test-Revised; SD, Standard Deviation; WAIS-R, Wechsler Adult Intelligence Scale–Revised.

**Paired t tests (2-tailed).*

†Number of correct responses.

‡Time in seconds.

§Missing values at 24 months (n = 69) were replaced with imputed values.

Bold-faced p-values indicate statistical significance at the 0.01 level.

decreases in the overall neurocognitive functioning domain [β = −0.008 (95% CI, −0.011 to −0.004)] and the complex processing speed and cognitive flexibility subdomain [β = −0.011 (95% CI, −0.015 to −0.008)]. Participants who met criteria for bipolar disorder at baseline showed increases in the verbal learning and memory subdomain [β = 0.226 (95% CI, 0.072–0.379)] compared to those who did not meet criteria for this disorder.

Subgroup analyses among participants experiencing more significant neurocognitive impairment (GDS ≥1.0) yielded virtually the same results as the main findings (data not shown).

DISCUSSION

This is the largest study to date to document the rate of neurocognitive impairment in a well characterized sample of homeless adults with mental illness, and examine the association of housing stability with neurocognitive performance, and factors associated with changes in neurocognitive functioning over 18 months. The prevalence of neurocognitive impairment, based on the GDS, was high (70%) and remained high (67%) in our sample over the study period, with small but significant decreases in the proportion of those experiencing more severe impairment. The rates of overall neurocognitive impairment, based on the GDS, were comparable to those reported in prior studies of homeless populations (28%–82%) (6, 7), and much higher than what has been reported in the general population (16%) (29). Performance on two individual NP tests, TMT-A and TMT-B (aspects of complex processing speed and cognitive flexibility), improved significantly over time; however, these improvements, while statistically significant, did not appear to be clinically significant.

Contrary to expectations, housing stability was not associated with significant changes in the NP domains examined, namely verbal learning and memory, processing speed, and cognitive flexibility or in the overall level of neurocognitive performance. There are several possible reasons for the lack of an observed effect in our study sample. First, it is possible that neurocognitive impairment (overall and in specific domains) is enduring, for a variety of reasons related to the complex medical/psychiatric morbidities substance use disorders, and traumatic brain injury, common in this population (31). Second, changes in neurocognitive functioning in this population may require longer time periods than 18 months, our study's follow up period, and may require active and sustained cognitive activation interventions (31, 32) and possibly physical exercise (33) to increase the likelihood of neuronal activation and growth that will eventually lead to improvements in neurocognitive status. Third, it is possible that our study was not powered to detect small changes in neurocognitive performance. Fourth, it is possible that housing stability may not sufficiently affect lifestyle, medical status, or other specific risk constellations necessary to see changes in neurocognitive functioning.

Prior research suggesting that assignment to a housing intervention improved neurocognitive functioning in a sample of individuals experiencing homelessness and mental illness lacked a control group of participants (16, 17). Neither HF nor usual services specifically targeted neurocognitive functioning for improvement. It may be beneficial to enhance housing interventions for this population to better accommodate and support those demonstrating significant neurocognitive impairment. Specifically, the integration of cognitive remediation should be considered in such interventions, as a substantial body of literature supports the use of this approach in improving neurocognitive functioning among individuals with SMI (34), including homeless individuals (15).

In terms of demographic variables, we found that older age was associated with decreases in various NP domains at 24 months, consistent with previous cross-sectional research in a similar population (12), as well as longitudinal research that found older adults to be more likely to experience decreases in neurocognitive functioning over time (35). All of the NP tests used in this study have significant age effects, and further efforts are needed to explore if changes observed in our study reflect "accelerated" or premature" aging (36, 37). Other socio-demographic factors typically associated with neurocognitive functioning, such as gender and education (8, 38–40), did not reach statistical significance in our study. Differences were also found for study sites, reflecting variation in the regional health and social service delivery contexts and unique subpopulations of homeless adults at each study site.

In terms of baseline clinical factors, we found that the presence of bipolar disorder at baseline was associated with statistically significant improvements in neurocognitive functioning. While bipolar disorder is typically associated with impairment across a variety of NP domains (41–43), improvements in manic symptoms (44) have been associated with improvements in neurocognitive functioning. It is therefore possible that individuals with bipolar disorder experienced clinical improvement over the course of the study, explaining improvements in neurocognitive functioning. On the other hand, the presence of major depressive disorder at baseline was not associated with changes in any of the NP domains examined, despite the episodic nature of major depressive disorder

TABLE 3 | Multivariable linear regression analyses using change in z-scores from 24 months to 6 months as dependent variables, adjusting for z-scores at 6 months (n = 902).

Predictor variable	**Overall neurocognitive functioning**				**Verbal learning and memory domain***				**Complex processing speed and cognitive flexibility domain †‡**			
	B	**(95% CI)**		***p***	***β***	**(95% CI)**		***p***	***β***	**(95% CI)**		***p***
Housing variables												
Stable housing (% days)	0.015	–0.071	0.100	0.739	0.081	–0.049	0.211	0.219	–0.016	–0.112	0.080	0.740
Lifetime homelessness (≥3 years)	0.052	–0.011	0.116	0.108	–0.002	–0.099	0.094	0.960	0.088	0.016	0.160	0.016
Baseline demographic variables												
Age (years)	–0.008	–0.011	–0.004	**<0.001**	–0.004	–0.008	0.001	0.152	–0.011	–0.015	–0.008	**<0.001**
Gender (female)	0.046	–0.023	0.116	0.191	0.106	0.001	0.212	0.048	0.027	–0.051	0.104	0.499
Education (≥HS)	0.063	–0.002	0.127	0.056	0.063	–0.035	0.160	0.206	0.085	0.013	0.157	0.021
First language (other)	–0.059	–0.146	0.028	0.186	–0.084	–0.215	0.048	0.213	–0.047	–0.145	0.051	0.344
Race (ref: white)												
Indigenous	0.011	–0.102	0.125	0.846	0.074	–0.099	0.247	0.403	–0.073	–0.200	0.054	0.259
Black	–0.123	–0.236	–0.009	0.035	–0.123	–0.295	0.048	0.159	–0.160	–0.288	–0.033	0.014
Other	0.001	–0.099	0.099	1.000	–0.010	–0.161	0.141	0.898	–0.026	–0.137	0.085	0.645
Study site (ref: Toronto)												
Moncton	0.090	–0.036	0.216	0.160	0.230	0.038	0.421	0.019	–0.003	–0.145	0.138	0.965
Montreal	0.107	0.017	0.198	0.020	0.267	0.13	0.404	**<0.001**	0.007	–0.095	0.109	0.895
Winnipeg	0.199	0.084	0.315	**0.001**	0.476	0.301	0.652	**<0.001**	0.035	–0.094	0.164	0.594
Baseline clinical variables												
High need	–0.065	–0.141	0.011	0.094	–0.093	–0.208	0.022	0.112	–0.064	–0.150	0.021	0.140
Alcohol abuse§	0.015	–0.055	0.085	0.678	–0.047	–0.154	0.059	0.384	0.056	–0.023	0.134	0.165
Substance abuse§	–0.005	–0.074	0.064	0.889	0.013	–0.091	0.118	0.802	–0.019	–0.097	0.059	0.630
Psychosis	–0.021	–0.093	0.050	0.557	–0.008	–0.117	0.1003	0.879	–0.040	–0.12	0.040	0.330
Major depressive disorder	–0.008	–0.078	0.062	0.813	–0.049	–0.155	0.057	0.365	0.027	–0.052	0.105	0.507
PTSD	0.088	0.014	0.162	0.020	0.124	0.011	0.236	0.031	0.064	–0.019	0.147	0.131
Bipolar affective disorder	0.086	–0.015	0.187	0.096	0.226	0.072	0.379	**0.004**	–0.003	–0.117	0.110	0.956
Neurocognitive performance at 6 months												
NP overall/domain z-score	–0.286	–0.331	–0.242	**<0.001**	–0.436	–0.488	–0.384	**<0.001**	–0.282	–0.327	–0.236	**<0.001**
Intercept	0.151	–0.039	0.341	0.120	–0.186	–0.472	0.100	0.202	0.415	0.201	0.629	**<0.001**
R^2				0.192				0.293				0.161
Adjusted R^2				0.173				0.277				0.142
RMSE				0.467				0.708				0.523
F-statistic	F (20, 902) = 10.43, $p < 0.001$				F (20, 902) = 18.22, $p < 0.001$				F (20, 902) = 8.47, $p < 0.001$			

*Average of HVLT-R total recall and HVLT-R delayed recall.

†Average of WAIS-R Digit Symbol, Trail A and Trail B.

‡Missing values at 24-month were replaced with imputed values for 69 individuals.

§or dependence.

HS, high school; NP, neuropsychological; RMSE, root mean squared error; PTSD, Post-traumatic stress disorder.

Bold-faced p-values indicate statistical significance at the 0.01 level.

and expected clinical improvement over time. Consistent with prior work (16), the presence of a substance use disorder was not related to any of the neurocognitive outcomes examined in the study. Given previous findings that substance use may moderate the effect of housing on neurocognitive outcomes (17), further research is needed to clarify the relation between substance use and cognition in homeless populations.

Several limitations to our study must be noted. First, although we administered a NP assessment battery that assessed various NP domains, it is possible that other NP domains (e.g. complex attention, visuospatial memory, or other aspects of executive functioning not captured by the TMT) may be more sensitive to changes in housing stability. Secondly, a longer treatment interval (i.e. longer than 18 months) and larger sample size may be necessary to demonstrate any effects of housing stability on neurocognitive performance. Third, beyond the baseline visit, we did not administer either a diagnostic interview such as the MINI, or standardized measures of disease specific symptom severity to examine possible changes in mental disorders during the follow-up period. Fourth, initial NP assessment took place at the 6-month study visit after study entry, raising the possibility that some improvements had already taken place during the first 6 months after study enrolment for some participants. Of note, independent sample t-test analyses comparing 6-month neurocognitive performance between the intervention and TAU groups revealed no significant group differences, and housing stability was achieved many months after study enrolment for most participants. Fifth, it is possible that the exclusion of participants with missing or incomplete NP data may have resulted in biases, and the exclusion of individuals experiencing relative homelessness suggests that findings cannot be generalized to this marginalized population. Finally, we did not examine the possibility of a moderating effect of medical status on housing stability and changes in neurocognitive functioning, which will be the focus of future research.

In summary, findings from the present study suggest that housing stability is not associated with changes in neurocognitive functioning among adults experiencing homelessness and mental illness over an 18-month time period. Additional interventions targeting neurocognitive performance, such as cognitive remediation and physical exercise may need to be considered within supportive housing programs and services. Future research should explore the multiple pathways to and distinct profiles of neurocognitive impairment in this population, and examine both longitudinal changes in neurocognition as well as their underlying neurobiological substrates to identify potential targets for intervention.

DATA AVAILABILITY STATEMENT

Anonymized At Home/Chez Soi participant data, study protocol, and statistical analysis plan will be available to investigators for studies that have received approval from independent research committees or research ethics boards. Study proposals and data access requests should be sent to the corresponding author.

ETHICS STATEMENT

The At Home/Chez Soi study was reviewed and approved by Research Ethics Boards at each participating site. All study participants provided written informed consent to participate in the study.

AUTHOR CONTRIBUTIONS

VS, SR, EL, RN, and CS conceived and designed the study. VS and AN drafted the manuscript and VS supervised the overall study. RN participated in data curation and supervised the data analysis. TB participated in data curation and performed the data analysis. VS, AN, AS, TB, RN, JJ, EL, CS, EW, and SB interpreted the data and contributed to manuscript revisions and edits. All authors have approved the final manuscript.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyt.2019.00865/full#supplementary-material

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CONCEPTUAL ANALYSIS
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Models of Housing in the Quebec Setting for Individuals With Mental Illness

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The World Health Organization (WHO) defines mental health as "a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community". A person's mental health is shaped by various social, economic, physical, and environmental factors, at different stages of life. Risk factors are heavily associated with social inequalities in the domains of employment, housing, and education. Theories of social determinants of health postulate the beneficial effects of factors exterior to medicine (regarding income, housing, education, and employment) on the health of individuals and populations. Recognition of the effect of social determinants on the health of vulnerable populations has been at the core of the intervention models and housing services developed by social service professionals in Québec. This article offers a review of housing services provided to psychiatric patients living in the community, over the last 50 years in Quebec. Different models of housing with social support which contribute to the autonomy, the security, and the empowerment of psychiatric patients are presented.

Keywords: housing, Quebec (Canada), mental illness, supported housing, supportive housing, permanent supportive housing (PSH), social integration, rehabilitation

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HOUSING FOR MENTALLY ILL PEOPLE IN QUEBEC: A HISTORICAL PERSPECTIVE FROM 1970 TO 2020

Housing affects every aspect of one's life and influences the environment in which an individual develops itself. The lack of adequate housing can notably impact the access to education, work, or basic amenities such as security, water, and food (1), which have a documented impact on health (2–4). It plays an important role in social integration and is a pillar of a functioning society for all. In that regard, the Universal Declaration of Human Rights declared housing as a fundamental right in 1948: "Everyone has the right to a standard of living adequate for the well-being of himself and of his family, including food, clothing, housing, and medical care and necessary social services…" (Article 25.1) (5). Housing has also been found to be a crucial determinant of mental health (6). However, as Dorvil et al. (7) mention, mental health policies of the past understated the importance of suitable housing as a factor for recovery.

Although many individuals living with mental illness still live in their naturally occurring network (see section on different housing models), lack of affordable housing leaves many in poor conditions which limits their ability to recover and to be independent. This leads to increased healthcare costs for the state, since many individuals receiving services in hospitals could be helped more efficiently by community services (6). The Mental Health Commission of Canada (6) has found that 520,700 Canadians with mental illness do not have access to adequate housing and reports that up to 119,800 of them are homeless.

Prior to the deinstitutionalization of housing services in Quebec, most people with severe mental illness were housed in institutional facilities, or asylums (8) with poor living conditions that perpetuated the segregation of people with mental illness and further increased the patients' social isolation (9). Many of these institutional wards were overcrowded and did not offer much opportunity for patients to rehabilitate, which led to an increasing number of individuals living in poor conditions. The release of these patients in the community, following significant mental health policy changes in the 1960s in Quebec led to a considerable reorganization of housing services and treatment of individuals with mental illness (7).

The *Réseau Québecois des OSBL d'Habitation* (10) supports that deinstitutionalization in Quebec was separated in three different processes. De-hospitalization, the first process achieved, resulted in a massive exodus of mental health patients from psychiatric institutions. From 1965 to 1981, there was a 70% reduction of inpatients in mental hospitals (11). From 1960 to 2002, the Louis-H. Lafontaine hospital, the biggest mental health hospital in the province, reduced its occupancy from 7,500 to 700 (9). These considerable changes brought by deinstitutionalization created an important need for housing throughout the community. The second and third processes, non-hospitalization (reducing the dependency of people with mental illness on hospitalization for treatment) and healthcare system reorganization (redistribution of services in the community and social reinsertion), were accessed at a much slower pace (10). While some progress initially highlighted the need for community-based services for individuals with mental illness (12, 13), reforms to the healthcare system led by Claude Castonguay in 1971 limited governmental implication in community-based services (10). In 1989, however, the Mental Health Policy report from the Quebec Ministry of Health and Social Services (MSSS—Ministère de la Santé et des Services Sociaux) supported the necessity for institutions and government policies to develop and fund community-based services that allowed long-term treatment and rehabilitation of people with mental illness (14). MSSS also identified housing, work and quality of services as priorities for the reintegration of individuals with mental illness in 1998 (15). Further deinstitutionalization of these services was planned between 1997 and 2002, as 3,000 patients were to be removed from psychiatric hospitals and redistributed into community housing (16).

MSSS renewed their mission concerning mental health and housing in their 2005 Mental Health Action Plan (17). The plan included financial support for housing available for individuals with mental illness. The report suggests that autonomous housing with support options are insufficient with 491 rooms (compared to other options such as intermediary resources with 2,967 rooms and family housing, which houses 4,385 individuals) and that more options should be available to these individuals so that they can choose housing that corresponds to their needs and that promotes social integration.

In the 2015 Mental Health Action Plan, MSSS restates its mission to reorganize the housing resources available to mental health patients by providing more rent supplements for individuals in need. In addition to services already offered, at least 10% of all housing options offered by the *AccèsLogis* program, plus 500 initial places were to be reserved for homeless individuals or individuals with mental illness (18).

The development of adequate community housing was by no means immediate and was not as sudden as the deinstitutionalization of these services. In fact, at first, deinstitutionalization led to increased homelessness and incarcerations due to poor planning related to community services (6). In the last 50 years, housing models for people with mental illness or other marginalized individuals evolved considerably through trial and error and research (see section on housing models below). Dorvil et al. (7) still note that: "However, public, community, and social housing resources are still insufficient to accommodate this de-institutionalized population. There is a high occupancy rate, and waiting lists are very long." (p. 499).

The rest of this article is separated in four sections. The first presents and describes different housing models from the first ones put in place after deinstitutionalization until today. The second section describes the findings of Dorvil et al. (7) study on the qualitative effects of these different housing models on its users. The third section is dedicated to the influential *At Home/Chez Soi* project and its repercussions on housing for marginalized groups in Quebec. The fourth section presents permanent housing with support, a current model that is gaining traction in Quebec.

DIFFERENT HOUSING MODELS

Defining the different services offered following the massive deinstitutionalization of housing for people with mental illness allows for a deeper understanding of their evolution in the last 50 years. Dorvil et al. (7) conducted a qualitative study on the subjective effects of different housing models on residents in Quebec. The study presented four different housing models, in addition to the family homes model (living with one's family).

The Family Home Model

As the de-institutionalization of psychiatric patients is a current issue in the field, it is important to recognize that an estimated 70 percent of people with psychiatric disorders live with their families (19–24). It is a simple solution to the housing problem, since these patients stay in their naturally occurring network and do not require state funds to function. However, we argue that this model is not sufficient for the rehabilitation of these patients. Caregiving is especially stressful for the families, as they are rarely prepared to deal with the onset of the disorders that can be accompanied with stressful behavior (25). For example, the severity of negative symptoms of schizophrenic patients was found to be correlated to the objective and subjective caregiver burden of their relatives (25). In addition to this, mental illness patients' family members deal with constant stress caused by discrimination, lack of services, and lack of understanding related to their family member's struggles

(26). Caregiving in these conditions requires constant energy and can put a strain on the family members' relationships (26) and can impair family functioning (27). Lack of social support has also been found to be associated with the onset of depression in family caregivers (27). This is especially problematic when individuals with psychiatric disorders are likelier to relapse in tense environments (28). This model requires stronger services and support from external organizations for the patient and the family itself to reduce their burden. Customized services that acknowledge the crucial role of these family members in recovery, while offering support when necessary, are essential to help these families overcome the difficulties associated to family housing. More research and services, such as psychoeducation, are required to allow mental health care professionals to offer better support and promote resiliency in families living with a mentally ill relative (27). In turn, these improvements could potentially reduce re-admissions in psychiatry (9).

The Custodial Model

This model offers long-term residential accommodations (foster homes) in which services are offered by non-professionals (9) as an alternative to the institutionalization of patients. However, these accommodations tend to perpetuate the problems associated to institutionalization and the retention of behavioral problems while failing to provide the required support to facilitate recovery (29, 30). Recently however, MSSS has recognized the burden of care of these homes and offers financial compensations to help alleviate this burden (31). In addition to this, direct services and training (e.g. psychoeducation on the individual's mental illness) are offered to better support these caregivers. Crisis centers are also available for patients when necessary.

Supportive Housing Model

This model is the natural progression from the previous model. It is intended as a professional therapeutic residential accommodation and is based on rehabilitation and skill development values. The end goal of this model is to allow residents to develop their own abilities and live autonomously (32). However, studies have shown that residents of this model do not tend to move further in the continuum of housing models and most stay in these accommodations (33, 34). Housing being conditional to receiving treatment is another criticized aspect of this model (35). This has the consequence of leaving some individuals with mental illness not "housing-ready" and does not access the high rates of homelessness found in these individuals (36, 37).

Supported Housing Model

This model is an answer to the problems of the previous model. There is a clear distinction between housing and treatment. Patients are encouraged to find housing (usually private apartments) themselves and then receive adapted support on site. The model aims at developing the patients' autonomy and promotes empowerment while offering long-term support. This model also values housing as a right and as a prerequisite for effective rehabilitation and values naturally occurring support as a means to rehabilitation (38). The distinction between supported and supportive housing models is however not so clear-cut in the literature. While some do operationalize their differences, many authors use the two terms interchangeably (38). The theoretical distinction between these models is however relevant to their historical analysis.

One-room Housing Model (Autonomous Housing)

This model accounts for the many service-users who live in private or subsidized autonomous one-room housing. This model is not under governmental control and is devoid of any form of control or standards. The repercussion of living in such housing on service-users is relatively unknown and support services are rarely offered on-site.

THE QUALITATIVE EFFICACY OF HOUSING CATEGORIES IN QUEBEC

While these different models historically succeed each other, their application does not, as services offered in Quebec are varied. However, In their study, Dorvil et al. (9) separate these different models into two categories: the residential accommodations (custodial and supportive models) and the apartment-type resources (supported and autonomous housing). Residential accommodations referred to settings where length of stay was limited, active rehabilitation took place, and day to day activities were supervised by staff. Apartment-type resources referred to settings where no limit was established for the length of stay and where housing was not associated with active rehabilitation.

Generally, younger participants preferred non-structured environments compared to older participants who preferred structure. This is potentially a consequence of long-term hospitalization, which fewer younger participants undergo. The continuum of housing options lead to a perceived hierarchy, where participants "moved up" in the system as their autonomy increased. This perception was also coupled with a perceived hierarchy among the residents of a same housing facility, where socialization and social status are a determining factor.

The residential accommodations seemed superior to apartment-type resources for the management and coping associated to one's illness. These accommodations offered more services and social interaction possibilities. Staff helped residents with their medication, which residents found especially useful, since they relied on medication to control their illness. Being around other people living with similar difficulties helped the residents by offering them a safety net and a circle of care. Participants in these accommodations sacrificed their autonomy, but were better protected from loneliness, which participants mentioned as a cause for relapse. The fact that residents did not have to conceal their illness helped further reduce the stigmatization associated to the illness and offered a safe place for participants to develop their own abilities. In apartment-type resources, participants often hid their illness and felt scared by the judgement of others, which lead to more isolation. Residential accommodations offered better opportunities than apartment-type resources for self-development. These accommodations are explicitly based on principles of self-development and rehabilitation. Apartment-type resources offered better opportunities for the development of individuality and autonomy, as its residents took their own decisions. Although some support was available to residents from the apartment-type resources, these services were less available than in residential accommodations and residents must further rely on their own judgement.

The opportunity to have personal space to withdraw to was especially beneficial to participants. In that regard apartment-type resources offered better opportunities for its residents to have their own space, since their apartment was private and was not shared with other residents. This also allowed them to have an active sexual life, which the lack of intimacy in residential accommodations prevented. Shared space is common in these accommodations, and residents rarely have more than one room to call their own. Participants living in apartment-type resources had more opportunities to personalize their space and had full control over their own schedule. Residential accommodations limited this by having tight schedules (e.g. curfews) and limiting one's ability to customize its space. These restraints were generally perceived as excessive control by its residents.

Residential accommodations offered better opportunities to socialize and interact with other people compared to apartment-type resources. These accommodations offered many social activities and promoted interactions between residents. Social skills and problem solving were encouraged and monitored by professionals. Participants who lived in apartment-type resources had to develop their social network outside from their home, but often depended on relationships they established prior to their residency (e.g. people they met during hospitalization). Loneliness was a recurrent problem associated with living in apartment-type resources.

Financial security was perceived as a constant worry by the participants, especially considering their low income. Residential accommodations offered better work and financial opportunities to its residents. Workplace integration programs were often included in these accommodations and its skill development opportunities led to easier employability. Staff from those facilities also helped residents in their budget management and were useful resources for interactions with welfare agents (as welfare was the principal source of income for most participants). These accommodations were also generally less expensive than apartment-type resources.

Housing influenced the relationship residents had with psychiatry. In residential accommodations, residents often must receive treatment to be able to stay, especially when these accommodations receive financing from hospitals. Apartment-type resources with or without support generally have no restrictions related to receiving treatment. However, some participants had a desire to maintain a relationship with psychiatry, and the ones who did not compensated by depending on other community mental health resources.

One problem that still needs to be addressed is that the participants from both categories felt isolated from "normal society." The study's discussion argued that defining the concept of integration as a process rather than a state would de-compartmentalize the social integration of individuals living with severe mental illness. De-institutionalization brought along challenges and adapted services need to address issues such as integration and normalization.

In other studies, little evidence was found to corroborate the superior efficacy of later models (e.g. supported housing) over others to promote recovery (39). However, housing stability has been found to be a strong predictor of reduced rates of shelter use, hospitalization, and homelessness, and has been found to be correlated to recovery (39, 40). In most of the research on housing, the housing retention rate is measured to access the efficacy of these models (40). We argue that more research using measures such as recovery (related to the mental health condition) would offer a broader picture of the efficacy of these different approaches.

AT HOME/CHEZ SOI PROGRAM

When deinstitutionalization politics began and massive amounts of patients from mental asylums required housing, their first residences were not so different from hospital housing units based on the then dominating custodial and supporting housing models. These residences hosted nine individuals each, with 40 individuals per block and group treatment plans unseparated from housing and copied asylums' operating: one bed per dorm, meals taken in groups, body hygiene, medication three times a day and leisure. Many authors (41–44) qualified these residences as caretaking that perpetuated the same problems that faced institutional housing (depersonalization, apathy, behavioral problems) without presenting the positive characteristics of these institutions (social contact, activities and programs, rehabilitation, and especially housing stability). *Housing First/Logement d'abord* is the antithesis of treatment first approaches, which was previously prioritized over housing. This model considers housing as a social right that cannot be conditional to following medical treatment or not consuming drugs.

At home/Chez soi was based on harm reduction and rehabilitation philosophies that put the person first. According to one of the project's main researchers (45), *Housing First*, originating from New-York, seeks to give access to permanent and independent housing with support for homeless individuals with high to moderate needs in mental health. This support includes a multidisciplinary team that organizes intensive follow up in the community depending on the residents' needs. This group of outreach workers was supported by a housing team that organized apartment visits and managed conflicts between the program participants and their neighborhood and landlords. Considering that some marginalized groups use up to 50% of their income for housing and to balance the insufficient funds offered by welfare, the project offers financial support as high as 70% of the housing costs. Outreach workers organize frequent visits and aim to develop the program participants' autonomy. The project supports these participants with legal issues, with security concerns and crisis management, with rebuilding relationships with their families, and offers activities promoting social integration and social interactions in the community. The project was financed by Health

Canada and was administered in five cities: Vancouver, Moncton, Toronto, Montreal, and Winnipeg. The goal was to examine the effectiveness of the *Housing First* approach (37), which values housing as a fundamental right and as a pathway to psychiatric rehabilitation (46). Program participants (homeless individuals with mental illness) were helped by being provided housing (notably by receiving rent supplements) prior to abstinence or being evaluated as "ready" for housing, while maintaining a consumer-driven approach. The overall results of this study were positive, as after 2 years 62% of the participants had been housed for 6 months or more (47). Four hundred sixty-nine individuals were recruited in the *At home/Chez soi* project, which included 285 participants in an *Housing First* experimental group receiving the model's services and 184 in a control group receiving services as usual (48). Most participants in the experimental group reported appreciating the quality and the consistency of the support offered by this model (45). These participants mentioned that their housing helped them feel like they had a place in the world, to be recognized as individuals, and to develop their autonomy. Housing stability was higher in the experimental group than in the control. Six months before the end of the study, 60% of the experimental group participants were housed all the time compared to 31% in the control group, and 21% of the first group were not housed at all compared to 59% in the control group (48). In general, *Housing First* programs were also found to have an 80% housing retention rate even with individuals who were previously perceived as not "housing ready" (36). Consequently, less readmissions in psychiatric hospitals and incarcerations were reported. The participants in the *Housing First* group of the experiment were more likely to report improvements related to their mental health, community functioning, and positive social interactions (48).

Landlords play an important role in the accessibility to autonomous housing for individuals with mental health disorders. In this regard, MacLeod et al. (49) conducted a qualitative study on the experiences of landlords in the *At home/Chez soi* Canadian research project. Sixty-three interviews with landlords and housing management were conducted in the related qualitative study, in four cities (Moncton, 23; Toronto, 16; Montreal, 12; Winnipeg, 12). The context in which the program was administered varied considerably from one city to the other (see 49).

The authors mention the Landlord-Service Provider Forum model (50). Its goals are "(1) to clarify the responsibilities, rights, and roles of landlords, service providers, and tenants; (2) to facilitate communication and shared problem-solving; (3) to increase housing stability; (4) to retain cooperative landlords; and (5) to recruit new landlords and expand known housing stock." (49; page 6). This model offers a possible avenue for offering support and education about individual rights and mental health to landlords in scattered-site housing. Bengtsson-Tops and Hansson's (51) qualitative study is cited, as it identifies three themes of the experiences of landlords with tenants with mental illness. The first theme was experiencing difficult circumstances related to the tenants' mental illness and was perceived as time-consuming and problematic. The second theme was providing assistance, as landlords were helpful to the rehabilitation of the tenants by providing security and informal support. The final theme was that landlords felt like they did not have the resources to deal with the difficulties associated with housing tenants with mental illness. The previously mentioned Landlord-Service Provider Forum model might be useful for providing these resources (49).

At home/Chez soi and *Housing First/Logement d'abord* pilot projects revolutionized housing for marginalized groups, homeless individuals, and psychiatric patients in Canada and Quebec. These changes marked an evolution from the previously prevalent supportive housing to supported housing by offering more housing options that followed the model's values. In the years following these projects, permanent housing with support gained considerable traction. MSSS' Mental Health Action Plan reflects this ideologic change in its recommendations (18).

PERMANENT HOUSING WITH SUPPORT

Permanent housing with support is not by any means a new concept in the field of housing studies. However, its widespread use and support from governmental agencies in Quebec is a rather recent development. As for many other discoveries, progress in housing for people with mental illness is achieved through trial and error and through the observation of other successful experiments in related fields. Permanent housing with support (PHS) is no exception to this rule. Temporary accommodations or housing, which were widespread after the deinstitutionalization of housing for people with mental illness, have been criticized for creating housing instability and limiting rehabilitation. Short term assessment of the problems associated with mental illness and homelessness jeopardizes the progress achieved in these programs once the supported individual leaves the program. Permanent housing with support, based on the supported housing model, counteracts these limitations by offering a community for these individuals in which to grow and develop autonomy while still receiving support when necessary. PHS combines housing with different types of support and intervention philosophies. For example, some PHS units offer entry with no prior conditions, while others prioritize harm reduction and have some prerequisites (40). PHS services are diverse in nature: scattered-site housing, housing units similar to low-cost housing (LCH) or community-managed apartments (52). Support is offered in a community-based setting or through home visits (53). These different types of PHS have been tested in the USA, in Europe, and in Australia notably. In America, PHS are mostly privatized and scattered throughout the community, including rent supplements and support of diverse intensity depending on the individual's needs. In contrast, Australian PHS prioritize community units where marginalized individuals (homeless, people with mental illness, etc.) live together in their own apartments supervised by outreach workers (54).

In Quebec, government politics favor community-managed PHS or municipal LCH. Some studies have shown that private, social, and community-based PHS reduce the use of shelters (55, 56), hospitalizations (57) and incarcerations (58, 59), while increasing housing stability (40). In their research comparing single mothers living in temporary housing to ones living in permanent housing units, Letiecq et al. (60) found that mothers living in permanent housing had significantly more social interactions, maintained more relationships with their families and perceived that they had more available support than homeless mothers living in temporary housing did. These factors are especially crucial for rehabilitation. One study by Gentilet al. (61) found that the quality of life and social integration of homeless individuals were not significantly different between various PHS types. However, there is still a need for more research comparing different types of PHS services to identify their different effects on their users and to identify these users' characteristics.

There are still many limitations concerning the implementation of PHS services. Leff et al. (40) have found limited evidence of the model's superiority over other housing models. These authors suggest that different interventions might offer different advantages that might be more suitable for individuals with different needs. They suggest that an individualized approach to services might be more efficient than limiting these services to one approach or model. Another limitation related to the study of PHS services is the lack of consistent operationalization and variable application of its theoretical framework in practice (40).

Further research should be carried out to access the efficacy of this model compared to others. Focus should also be shifted toward the operationalization of the services offered in each types of housing analyzed. This shift would allow the identification of the specific elements leading to better outcomes.

For the sake of a metaphor, housing and rehabilitation could be represented as learning how to swim. The Custodial Model and similar models of housing could be trying to teach swimming by offering theory classes, the *At Home/Chez soi* project and autonomous apartments could be trying to teach swimming by throwing learners in the water (to a certain extent, depending on the offered support) and PHS could be teaching swimming by offering practical lessons with support.

Complementarily to these different housing models, there exists a dynamic network of community organizations that offer support to many different populations of marginalized individuals. According to Morin and Baillergeau (62), social housing with community support are non-profit, government subsidized housing accommodations where tenants are taught basic skills to look after their unit autonomously. Stable housing with affordable cost and long-term support seems to be the most efficient method to allow the social integration and rehabilitation of individuals with mental illness.

CONCLUSION

In the last 50 years following the deinstitutionalization of psychiatric facilities organizing housing, the housing situation in Quebec fielded a wide array of different housing models. These models have evolved with its society and its values, but also benefitted from the experimentation on what works and what does not.

The problematic of homelessness, which affects many people with mental illness, dates back from the dawn of any social organization. Historically, self-reliance has been closely associated with the resources offered by owning property. But what becomes of the ones who do not own property? Since the creation of the Welfare State in the UK in the end of the 19th century, government considers social protection a fundamental right and a basic aspect of living in a solidary, even democratic society. Projects such as *At Home/Chez soi,* helping homeless to get access to housing at reduced costs, are a demonstration of the implication of the government in the social security and social integration of its citizens. This implication is a testament to the humanistic values of our society as well as a bet on the benefits that come with the rehabilitation of marginalized individuals such as people with mental illness.

Many countries of the economic European community, including the UK, have housing benefits programs that reduce the gap between low income and the need for quality housing. These politics infer that housing is a social determinant of health, even more so than healthcare (63). As the WHO defines it: 'Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity."

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Housing and Support Narratives of People Experiencing Mental Health Issues: Making My Place, My Home

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Background: Choice, control, privacy, and security are widely reported housing preferences of mental health consumers, are associated with improved well-being and greater housing satisfaction, and are important for recovery. This paper describes housing and neighborhood experiences from a larger qualitative study that sought to learn with people experiencing mental health issues about their everyday lives in an Australian urban community.

Methods: A participatory approach to health research informed this study. A participatory reference group, including four people with consumer perspective knowledge and experience of mental health issues and four mental health practitioners with service provider and researcher perspectives, worked together to design and implement this study over a 4-year period. Thirty-nine participants were recruited, including 18 women and 21 men living in metropolitan Melbourne and receiving community mental health care for ongoing mental health issues related mainly to either psychotic or affective disorders. Participants each took part in one to three interviews or a focus group. The data were transcribed and analyzed using narrative and thematic analytic strategies, underpinned by reflective discussions with the participatory reference group.

Findings: Participants' experiences of their housing and neighborhoods emphasized qualities that either contributed to or challenged their sense of being "at home." Identifying with a place as home was transformative, especially when supported by friendly neighborhood interactions, safety, and accessibility of local amenities. Unsatisfactory housing situations and limited income worked against participants' efforts to regain a sense of well-being and improve their situations. When being home was challenging, strategies used to counteract this included getting a pet and getting out as a means of resisting isolation at home. Differing views and ways of using the available support workers were described, suggesting tensions between seeking to be self-sufficient and valuing support.

Conclusions: Social housing locations and housing-related support should explicitly attend to safety and security concerns. Collaborative care planning and outreach support should attend to supports for navigating issues with neighbors, housing, harnessing natural supports, and opportunities for being in others' company, as well as recognizing the importance of pets in people's lives. Understanding the strategies that mental health consumers find helpful in creating a sense of being at home, and the role of "place" in recovery merit further consideration in research and practice.

Keywords: housing, neighbourhood, mental illness, lived experience, qualitative research

INTRODUCTION

Secure and appropriate housing is essential to the well-being of people living with mental health issues (1, 2) and contributes to the process of recovering (3), as well as being a basic human right (4). Historically, housing and support services for people living with persistent mental health issues began with the development of community-based residential alternatives to institutional care, typically characterized by communal living and on-site staffing, with aims of fostering housing stability and reducing hospitalizations (5). Beyond ordinary housing in an apartment or house with family or friends, different types of housing and support services have evolved to meet the needs of people experiencing mental illness internationally, and the terms used to describe them vary considerably between settings and countries (5–7). For instance, supported housing may describe supervised housing arrangements with staff support linked to the accommodation, such as group homes and communal residences (8). Yet, the term supported accommodation may also be used to differentiate that the support is provided by non-professional support staff, rather than clinically focused, irrespective of whether the housing is single or shared (6). In comparison, housing with outreach support describes an approach in which a person's ongoing housing tenancy is de-coupled from the provision of treatment and individualized, flexible outreach support is emphasized (9). This approach is described variously as a Housing First, permanent supported or supportive housing approach (9, 10). In this paper, housing with outreach support describes the latter approach, and the term supported group accommodation is used for any group accommodation where there are staff on-site (11).

Housing research, predominantly from North America and the United Kingdom, has previously focused on housing characteristics, housing preferences, mental health, and psychosocial outcomes for people experiencing mental illness (12). Having choice and control of one's living arrangements is a consistent theme across international studies of consumers' housing preferences (7). Furthermore, choice in housing, residential stability, and neighborhood qualities, such as safety, appear to be associated with improved well-being and greater housing satisfaction (11, 13). The strongest evidence demonstrates the effectiveness of permanent housing with outreach support for formerly homeless people living with persistent mental illness, whereas evidence is less well developed regarding the effectiveness of supported housing of all kinds for other people experiencing mental illness (12, 14). Psychosocial outcomes across housing models ranging from independent tenancies with outreach support to supported group accommodation also remain difficult to compare due to the diversity in how these approaches have evolved and because conducting trials in this area is challenging (5, 12, 15). Yet, having a home and supports appears to reduce the likelihood of being hospitalized (12, 16). Improvements in social integration and recovery are also reported but less clear, but there may also be a greater risk of loneliness and isolation for residents living by themselves in housing with outreach support, albeit that results are mixed (2, 11).

Mental health consumer views and experiences of various types of housing and support have been explored through qualitative research. Recent reviews have synthesized the findings of over 60 qualitative studies exploring consumer experiences and perspectives of supported accommodation services (6); getting and having a home, and receiving housing support (10, 17); and how housing with outreach support facilitates social connections and participation (2). There is considerable overlap between these three reviews (reported in four papers) in terms of the studies included and the range of personal, social, and service-related factors identified that shape lived experiences of housing and support services. For instance, consistent with aforementioned studies of housing preferences, these reviews highlighted that consumers personally valued privacy, choice, and stable housing (2, 6, 17). Whether in permanent or transitional housing, having a home was central to consumers' experiences of stability and thriving, connecting with others, and negotiating a positive sense of identity beyond that of being ill; their views also have much in common with more widely held meanings of home (6, 17). All three reviews also noted lived experiences of loneliness and isolation across individual and communal living situations, which required the balancing of needs for refuge, solitude, and social contact (2). Service factors like being required to move on from one housing service to another, becoming displaced, and losing social networks in the process exacerbated these experiences of loneliness and isolation (6). Yet, valued elements of support from services included individually tailored support, respectful and supportive relationships, assistance with practical matters and organizing activities, and neighborhood and community experiences that fostered inclusion, rather than reinforcing social isolation or exclusion (2, 10). This suggests consumer perspectives of their neighborhoods and communities, not only their housing, merit further exploration to better understand how to design support in different housing settings.

This paper reports findings from a participatory research project, using qualitative methods, undertaken with people experiencing mental health issues and living in a metropolitan region of Australia (18). The project aimed to learn what the everyday lives of people experiencing ongoing mental health issues are like, and to better understand community participation from their perspectives. This report focuses on one aspect of the larger project, that is, the housing and neighborhood experiences integral to participants' everyday lives.

MATERIALS AND METHODS

Design

This research was informed by a participatory approach to health research, in which the role of participation, the uses and construction of knowledge, an action orientation, and issues of power were considered in its design and conduct (19, 20). What makes research "participatory" has to do with who participates, the ways in which people are engaged in the research process, the spheres of their involvement, and whose purposes are served through participation (20). This study was designed to be *participatory* in two senses: firstly, through engaging people as partners in exploring their knowledge and understandings of their everyday lives and worlds; and secondly, through designing the research process to involve people acting *for* themselves and *with* others in a collaborative manner, rather than solely as the subjects of research (21).

Participatory approaches have been variously used in mental health research to address the needs of under-served populations, bring about systems change in mental health services, and better understand processes for supporting community re-integration and recovery (22–26). Drawing on principles outlined by Nelson et al. and Wadsworth and Epstein, a participatory reference group was convened as the key vehicle to amplify the voices of "critical" groups of people in representing their own interests and values in the research, and to determine the descriptions of themselves and their worlds that were used. This involved identifying and inviting people to take part in the reference group whose interests are "critical" to the research in question, and are the sources of "literally critical things to say about it" (26, p.56). Specifically, the membership was based on three main aims: to involve at least as many mental health consumers as people with other perspectives; to connect with consumer networks knowledgeable of the situations faced by consumers; and to foster dialogue across differing interests and knowledge bases (24, 27). Thus, members of the consumer advisory groups of local mental health services were invited to join the participatory reference group, and each of the mental health services was invited to nominate a representative. The resulting participatory reference group included four people with lived experience and consumer perspective knowledge of mental health issues and four members with mental health practitioner, carer, and researcher perspectives. This group worked together, meeting every 6–8 weeks over a 4-year period. The group defined the study focus, developed the recruitment strategies and qualitative interview guides, obtained feedback on the research processes, guided the qualitative analysis of interview data and development of themes, and presented the research at conferences over the course of the project.

Setting

This research was undertaken in northern metropolitan Melbourne in south-eastern Australia, through the local mental health services that provide clinical care and community support for people with severe and persistent mental illnesses. Approximately 20% of Melbourne's population lives in this geographic area, which extends from Melbourne's inner city suburbs to its northern urban–rural fringe, with a highly culturally and linguistically diverse population and household incomes that tend to be lower than the metropolitan average (28).

Sampling and Recruitment

Qualitative sampling aims to achieve sufficient sampling of information sources (i.e., people, places, events, types of data) to develop a full description of the phenomenon under study (29, 30). Adults of working age with lived experiences of mental health issues, resident in northern metropolitan Melbourne, and in receipt of community mental health services, were invited to participate in this project. Through purposive sampling, diversity in experiences in terms of age, gender, family structures, and educational and employment backgrounds were sought, so as to enhance the completeness of information gathered and to guard against privileging a particular perspective over others, issues central to rigor in qualitative sampling (31). To achieve this, the participatory reference group identified community mental health programs through which to approach people with relevant experiences, and negotiated locally responsive strategies with each program. Wherever possible, recruitment involved sharing information directly with mental health consumers, rather than relying on staff as intermediaries to distribute information. These strategies included the development of an information flyer for distribution at existing peer support groups, as well as attending meetings of established consumer advisory groups, social and recreational programs, and community rehabilitation and support programs that provide services for people experiencing ongoing mental health issues. As recruitment progressed, the evolving range of participants and experiences were discussed in participatory reference group meetings and additional sources chosen to extend our understanding of emerging issues. Written informed consent was completed with each participant, and all participants received remuneration (AUD$25) for each interview in recognition of their contribution and to limit out-of-pocket expenses related to participation.

Participants

Thirty-nine participants took part in this research. As shown in **Table 1**, there were 18 women and 21 men, the majority of whom were between 30 and 49 years of age. While four participants (almost 10%) were employed full-time and 19

TABLE 1 | Socio-demographic profile of participants (N = 39).

	WOMEN n = 18	MEN n = 21	TOTAL N = 39
Age			
18–29	1	6	7
30–39	6	6	12
40–49	7	6	13
50–59	2	2	4
60–65	2	1	3
Our relationships*(1)			
Single	5	15	20
Partner/married	9	4	13
Separated/divorced/widowed	4	1	5
Children	9	2 *(4)	11
Our homes*(4)			
Family home	9	10	19
Rented accommodation	9	7	16
Who we live with*(4)			
Family with children	7	1	8
Parents, partners, friends	5	6	11
By self	6	10	16
Self with pets	*5*	*2*	*7*
How long we have lived here*(4)			
Less than 2 years	3	4	7
2–5 years	5	4	9
5–10 years	5	2	7
Over 10 years	5	7	12
Experiencing and seeking help for mental health issues*(3)			
2–5 years (typically "longer undiagnosed/longer without help")	3	4	7
5–10 years	4	6	10
More than 10 years	11	8	19
Our education/training*(4)			
University-level course	8	4	12
Apprenticeship/vocational course	4	8	12
High school only	6	5	11
Our work			
Full-time paid work	2	2	4
Part-time pad work (> 15 h)	5	10	15
Casual/occasional paid work	3	1	4
No paid work	8	8	16
Unpaid volunteer	7	5	12

**() indicates no. of men for whom data is missing.*

participants (49%) had some part-time or occasional paid work, government income support was the main source of income for most participants (70%). Participants reported experiencing mental health issues related to psychotic disorders (41%), bipolar disorder (28%), and depression and/or anxiety-related disorders (33%); almost half the participants (49%) had experienced and sought help for mental health issues for more than 10 years. In terms of housing, almost half of the participants lived with family, partners, or friends, and had resided in their present housing for 5 years or more, while among participants living in rental accommodation, seven (43%) identified this as public housing. The majority of participants received outreach support. Using the Simple Taxonomy for Supported Accommodation (STAX-SA) (32), this type of housing support is best classified as Type 4 (i.e., individual accommodation, no on-site staff, low/moderate support, and limited emphasis to move on—beyond that of market rental conditions).

Qualitative Data Collection

Multiple methods were used to collect information from different sources and perspectives, including in-depth interviews, follow-up reflections on participants' stories, field notes, and recorded participatory reference group discussions. By illuminating different facets of participants' experiences, this aimed to contribute to a more critical and complex understanding of their experiences as a whole (30).

In-depth interviewing was used to converse with participants about their everyday lives and participation in their communities, and to explore the contextual nature of these experiences (33). The participatory reference group developed an interview guide by beginning with a brainstorming activity on the topic of "our experiences of finding things to do in our communities," followed by discussions that led to the identification of key content areas and phrasing for questions (see **Table 2**). Viewed as events in which meanings are negotiated, the in-depth interviews were constructed to include open-ended questions that established the topics being explored, and to support participants to take the lead in telling their stories, rather than the researcher directing the interview.

Interviews with the first author (an occupational therapist who previously worked in mental health services) took place at locations to suit participants as far as possible. Twenty-three participants preferred interviews at their homes, and on three occasions, participants' partners also participated in the interviews. Sixteen participants chose to take part in interviews or a focus group at the research facility or their place of daytime occupation. The focus group was co-facilitated by the first author with a consumer researcher. The interviews and the focus group were digitally recorded or, when participants preferred, handwritten notes were made. Notes were elaborated immediately after interviews in as much detail as possible, and interview and focus group recordings transcribed verbatim. Each

TABLE 2 | Interview topics.

How do you spend your time at the moment…
Where do you spend time? Home/elsewhere?
What kinds of things do you do…

- For fun/enjoyment
- For quiet time—time out/to get away
- Working—paid, unpaid/voluntary
- Learning—study/classes for interest/education
- Around the house—chores/pets/helping others
- To be with other people for company, friendship, entertainment

What is important/matters to you in your life? Now?/Times when it's been different? In what ways?
What's been helpful/supportive in getting to do what matters to you?

- Places to go? Transport? Money? Information? People's attitudes? skills?
- What's been difficult/challenging/created obstacles for you related to doing these things?

What would you like to be doing in the future—dreams, hopes

- If you could wave a magic wand/if you could be doing whatever you choose, what would it be?
- What challenges/issues/fears would this involve overcoming?
- What might make it happen? What could help? In what ways?

Is there anything else that we have not covered that you think is important/would like to tell me about?

participant was sent their typed-up interview or focus group. Interview participants were invited to a follow-up interview with the first author, so as to create an opportunity for reflecting together with participants on what was said and understood, and to actively engage participants in interpreting their stories. As a result, the 39 participants took part in either 1 focus group or 1–3 interviews each: 54 interviews in total.

Qualitative Data Analysis

Narrative and thematic analytic strategies were used. Interview transcripts and field notes were reviewed and coded using NVivo software, first by coding for meaning with "*in vivo*" codes that closely reflected participants' language (34). Second, coding for narrative features, such as turning points, metaphors, and transformative elements, as well as attending to how power was revealed across their stories sought to uncover taken-for-granted assumptions or social structures affecting participants' lives (35). As shown in **Table 3**, these steps were interwoven with going back and forth in an iterative manner between working with the data and discussions in participatory reference group meetings to inform the development of the themes.

FINDINGS

As a whole, this research revealed stories of ongoing struggles in everyday life that involved actively and intentionally striving to participate, to be oneself, and to be recognized as contributing by others in one's community, which could not be taken for granted by participants. Hence, their stories evoked acts of resisting in a lived struggle to reclaim power within daily life, and their strategies for doing so. Six major themes were developed to account for these diverse ongoing struggles, ways of participating, and the social and material conditions revealed in participants' stories, as illustrated in **Figure 1**. One of these themes—*being at home in our places and neighborhoods*—related specifically to participants' experiences of housing and the immediate neighborhoods in which they live. Findings from this theme are described below, with participants' voices integrated into the descriptive text using direct quotations and use of pseudonyms agreed upon with participants themselves.

TABLE 3 | Steps undertaken to develop themes.

a) Transcribing the interviews;
b) "Mapping" each person's interview story, through re-listening to the interview recordings, reviewing the transcripts and field notes to get to know the stories well;
c) Reflecting with individual participants on the "story maps" in follow-up interviews to share provisional understandings and create dialogue about their interpretation;
d) Developing a group process with participatory reference group for thematic analysis of the data;
e) Reviewing the story maps in the participatory reference group to identify preliminary themes;
f) Returning to the data to code and explore it, informed by the participatory reference group perspective;
g) Piecing together themes by working between writing, reviewing coded data, field notes, and recorded discussions with the participatory reference group;
h) Critical reflections on themes with the participatory reference group and feedback sought from local consumer groups.

TABLE 4 | Being "at home" in our places and neighborhoods: summary description.

Sub-theme	Category
My Place, My Home	A place of my own It's good around here: finding my niche Everything's accessible here
It's stressful living here	There's few options There's poverty and there's powerlessness
Being home is challenging	It's better being out It's not four walls
Balancing self-determination and need for support	

Central to participants' experiences of their housing and immediate neighborhoods were qualities that either contributed to or challenged their sense of being "at home" where they lived, impacts on their daily lives, and strategies that participants used to make a difference to home life. **Table 4** summarizes the sub-themes and categories presented below.

My Place, My Home

My Place, My Home represents participants' varied perspectives of home. Firstly, identifying with a place as home was appreciated as transforming participants' lives, or restoring a sense of home lost while experiencing mental health issues. The freedom and privacy of living in a place of their own greatly improved their lives from these participants' perspectives. Secondly, specific qualities of their immediate neighborhoods, notably friendly interactions, safety in the vicinity, and accessibility of local amenities, contributed to participants feeling at home where they lived and their sense of well-being. Each is illustrated.

A Place of My Own

Living in or moving to a place of one's own, whether that meant living by oneself or with others of one's choosing, was preferred over living in communal residential facilities, irrespective of the type of supports available. Whether reflecting on what they valued about their homes or on housing transitions made over the course of experiencing mental health issues, participants highlighted that being in a place of their own was transformative.

Moving into their own places was typically an important turning point in participants' lives, which were often described as having been "turned upside down" (Maria) leaving nothing except the "stamp of mental illness" (Emma). These turning points included experiences of moving into rental accommodation with outreach support or moving into public housing, each being transformative in that a sense of freedom, space, and privacy was gained. As Elvis described, moving into a place of his own with outreach support seemed to represent a shift from being cared for to doing more for himself, especially cooking in which he took pride, it being connected with his family's traditions of cooking.

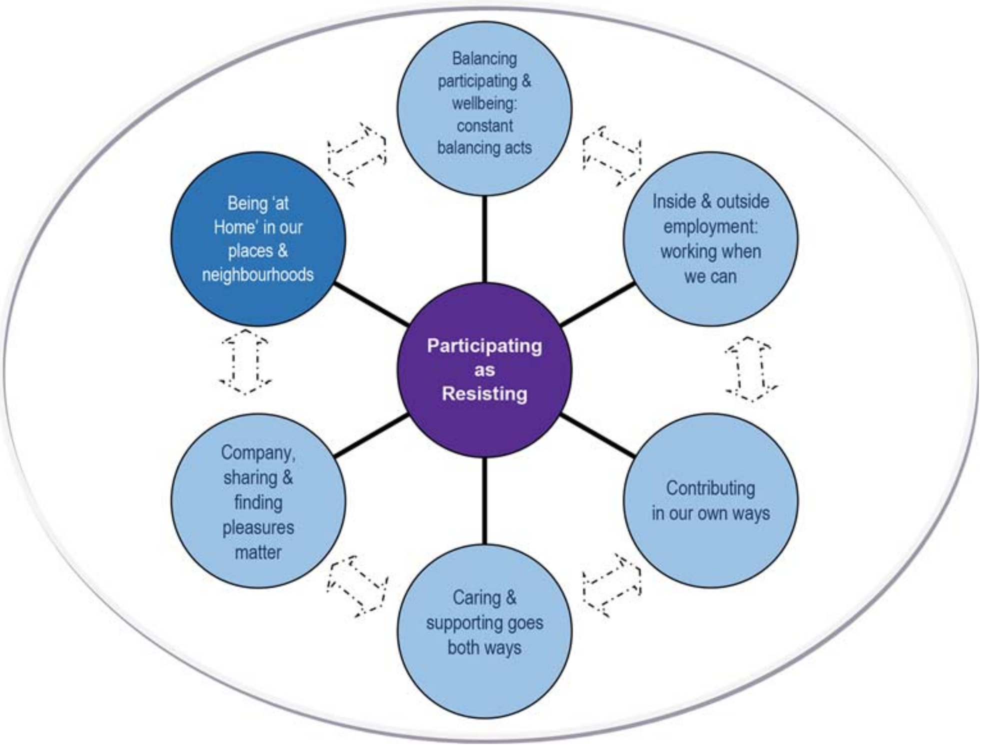

FIGURE 1 | Diagrammatic representation of participating as "resisting" [Adapted from Fossey, 2009 (18)].

> Elvis *There's a big difference in my life because two years ago, I didn't have a place of me own. I was living with my mother. And a lot of my time was spent upset, you know, and I wasn't doing very much. When I moved out of home … basically I got around in a really good way. I did many more things from there on. I spend my time from my house doing all sorts of stuff. For the first year of my house I spent, although I'm still with [outreach team] and all that, I did a lot of cooking for myself, tried to watch as much cooking shows as possible … that became basically an everyday thing … I like to cook a lot of different things to keep myself happy.*

Moving into their own places sometimes also involved a challenging adjustment. For instance, Frank described having been "too scared to move out of [parents'] home" for some time after being "pretty sick", and reflected that: "when I first moved, I used to get homesick and go home all the time." Yet, with "good support" from services and family, he had come to appreciate the freedom and privacy to lead his own life: "being able to have a drink and not be pestered. Have a cigarette. Plus me girlfriend comes over … [at weekends], and she brings her old dog" (Frank).

Likewise, after living surrounded by people in a communal residence, Fiona too described moving into her own place as "an amazing adjustment," which she initially found almost unbearable unless talking to family or friends on the telephone: "I couldn't bear to be at home. When I was at home, I was in tears. The only time I could be at home would be when I was on the phone." However, with their support and getting a cat, Fiona described turning this around: "you'd never get me back there! I like my freedom. I like my privacy. I like my peace and quiet now."

It's Good Around Here: Finding My Niche

Participants highlighted a range of positive qualities in their neighborhoods that improved their sense of being at home where they lived. Hence, descriptions of their neighborhoods often included comments about finding themselves living in a "very friendly street … [where] everybody stops and has a chat" (Annie). But beyond this, some participants also spoke of neighborhood experiences that seemed to foster a sense of finding one's niche.

For Maria and Emma, women with young families, a place to make a home was not only transformative for themselves and their families, but also supported by experiencing their neighbors as friendly. To illustrate, Maria contrasted the immediate neighborhood of her previous unit on a busy street to her sense of being more accepted and part of her new neighborhood.

> Maria *Overall things are improving … it's hard, but I think it's better … Moving here—we moved here about six months ago. Being here's helped*

> *a lot. We're getting to know the neighbours. Where we lived before, [in three years] no one spoke to you hardly. Here, people are friendly —they say hello and we're respectful of each other. I've been in next door and they've been over; their son's come round to play. I've got to know the lady over the road, and been supportive of her [when she had some difficulties]. The neighbours are pleased with what we've done to the garden too—we've fixed it up, planted things, made it neat—the previous tenants trashed the place. … It's easier for safety reasons too: [daughter] can play without going out on the street and for me not having to go up hill to shops.*

Emma too emphasized having friendly neighbors who helped each other out, some of whom also had children like her:

> Emma *I just spend a lot of time looking after the kids and my neighbour's kids come over and it's like kids, kids everywhere … it's good to have like good neighbours … you know, if you need anything or she needs anything, we sort of know we can come to each other and stuff like that.*

Similarly, others described neighbors helping each other out with transport, shopping, or house maintenance as valued aspects of where they lived. Some participants too emphasized that they appreciated living in a familiar neighborhood, or knowing "all the people … it's like a little country town" (Frank). For instance, seeing "aunties and uncles" and other people whom he knew in the street gave Elvis a sense of connection with others around him, despite his finding social contact more difficult since his illness.

> Elvis *I don't have too much connection with anyone anymore, but I see people, you know. Today I saw [outreach worker] out the front of the supermarket. Everyone's around me, you know, all live around here … You can see everybody.*

Other participants made similar points in speaking of the positive aspects of getting away from stressful or troublesome neighborhood situations. For instance, speaking of her supported accommodation, Sandra described:

> Sandra *It's safe being here … Nobody can break into your house and do whatever they want with you, so you're covered. …There's no drug addicts around here, no alcoholics, everyone's really nice, so it's really good.*

Contrasting it with previous experience of neighbors who frightened him because they "trashed" property and gave him "nothing but hell [and] it's amazing I didn't have a breakdown," George too described being much relieved with his present neighbors: "people with, like my own illness, they're good because we can understand each other … we help each other out, which is good."

Everything's Accessible Here

The accessibility of local amenities was also represented in participants' perspectives of home and where they lived. Specifically, access to amenities such as shops, public transport, parks, and services within walking distance of home were noted as an advantage: "The fact that everything's accessible to me" (Diane). Participants commonly referred to this: "I am living in a good suburb as far as transport goes" [Ron]; and "I've got a fair few things I can do in walking distance, plus it's close to public transport … near shops and everything: the supermarket's just over the road" (Frank).

Accessible public transport was important not only to get to particular places, but also as a way of getting out and being around people. For instance, Elvis described his sense that public transport could take him anywhere and help him "avoid being sick," by taking him to places where being around people might distract him from troublesome voices or thoughts.

> Elvis *Around my place is everything you could possibly ask for. I've got the tram system down the road, which is only about 400 metres away, maybe 500 metres, and I've got the train system one street away. I can hear it every day of my life. … Where the tram is, there's a whole ton of buses that go to K-Mart. They go all sorts of places … And it's just good to have all that transport around 'cause I know one day I'm going to get sick…. if I can't avoid it, I want to get on a bus, I want to get on a tram, I want to do something different.*

In comparison, participants also highlighted how poor housing situations could be challenging, as elaborated below.

It's Stressful Living Here

The stressfulness of living in unsatisfactory housing situations worked against participants' efforts to regain a sense of well-being, while low incomes limited their housing options. For some participants, the difficulties of finding affordable and safe places to rent meant feeling compelled to live in stressful housing situations where "neighbours are quite aggressive and abusive towards me" (Kate) or there were regular disturbances and "other things going on in the flats around me that didn't contribute to a sense of security and well-being" (Ron). As Ron elaborated:

> Ron *One of the things that didn't help was no job, no financial security, and for a time there, I was really, literally speaking, I was homeless … I wasn't sleeping on park benches, but I didn't have a place, which I could call my own, even if it was being rented … there's no security and yeah, you just live in very dodgy situations. … I don't want to live in a cheap flat next to a rock band, which is*

> *what I'm doing at the moment, [but] I need to have more money to be able to afford to live somewhere else.*

There's Few Options

Limited housing options for some participants meant living in "dodgy situations," as Ron described above. Others described having few alternatives but to live with parents, or to move between friends' places owing to a restricted income from government income support and restricted access to paid work. For instance, Matt described living "in between friends' places all the time and I stay a lot at friends' houses" with mixed feelings: "I feel like I do get in the way … [and] I want to stay there but I don't want to." Further, Peter described appreciating that living with his parents had provided a place to live since experiencing mental health issues. Nevertheless, he expressed a sense of loss and missed having his own place: "in some ways it's like I'm not limited, but in other ways I'm really limited … And I miss cooking, it sort of gets on my nerves … in some ways I'd like to move out so I could cook" (Peter). While not always as stressful as the unsatisfactory housing conditions above, these participants seemed to have a sense of being constrained and were yet to find a sense of being "at home."

There's Poverty, and There's Powerlessness

Poverty was a reality perpetuated by the necessity to rely on government income support for many participants, whose experiences of mental health issues had disrupted their working lives or marginalized them from the workforce. As Ron described, "my mental illness has created an environment of, you know, it's placed me in a situation of poverty" (Ron), a situation that could be at least as difficult as mental health issues themselves:

> Peter *It's terrible … economically, the person is living in poverty and that's a devastating thing … the economic can be emotionally devastating: when you don't have money, when you don't have fulfilling work, it can be absolutely devastating … It is actually hard to describe which is worse.*

The predicament of struggling financially also meant that participants were beholden to landlords and bureaucracies for housing and income support, which in turn constrained their power to address challenges related to their living situations: "there's poverty and there's powerlessness" (Ron), both of which added to the stressfulness of their living situations.

Participants recounted varied situations involving landlords, housing inspectors, or public housing applications, which led to feeling unsafe at home, frightened, or "overwhelmed" and further held back in their recovery. For instance, having lived in the same rented unit for 8 years, Kate described "my environment's actually destabilized while I've been here" and recounted that whenever her housing and financial security were threatened, such as when the "owner wanted to put [the rent] up by like forty dollars in one hit, which I couldn't afford … I get so frightened that the only way out I can see is suicide." For participants, such as Kate, living with a constant sense of vulnerability in their housing underscored the importance of having active support.

> Kate *It's a huge safety net for me … That's why [support worker]'s trying to get me into housing where I'm not having to deal with estate agents. I mean I'd still have to deal with [housing commission], and sometimes that's not a good thing either, but it's more structured … If something goes wrong, you can report it … There's also the security thing because it's long term. It's also because it's 25% of your wage, so you know if you can't work, then you know you can afford to live there.*

Hence, despite a supported housing application being declined and the seemingly "indefinite waiting list," Kate viewed public housing as her most likely way to achieve a sustainable sense of safety and security to move forward with her life. As if to endorse this view having spoken similarly of limited options and being held back, Maria described the restoring of hope and the possibility of having dreams again following moving into her own place in public housing:

> Maria *It's very hard on certain incomes to have those dreams and goals, right, that holds you back. … Our last place you could never buy, whereas this place belongs to the [housing] commission, so there's a possibility to buy it off them some day. At the moment, it's hard to put much money away. I try to keep some back for unexpected things…, but even though I'm good with managing money, I can't seem to save a lot. So maybe buying this place is just a dream, but it's a possibility.*

Being Home Is Challenging

Spending time in their home environments was described as challenging by many participants and commonest among those living by themselves (almost half the participants), particularly among women and those outside the workforce. These participants actively struggled with being ill at ease home, so that getting out was helpful in resisting isolation at home. Pets too provided companionship in resisting this isolation.

It's Better Being Out

Preferring to get out rather than spend time at home was described as a strategy for overcoming "being stuck in the house" (George), a sense of being "locked in" (Joan) or "trapped" at home (Kate). This strategy was used most often in contexts of participants not wanting to be on their own, safety concerns, or having a sense of not fitting in where they lived. "Getting out" also required participants, mostly women, to find opportunities for participating and contact with others beyond home. For instance, after years of "doing battle" with depression, Joan described relying on getting out each day:

> Joan *I'm out most of the day … that gives me a feeling of, you know, that I'm doing something and I feel happier and I'm not staying home, staying in bed and getting up late and, you know, it's a chore to get going. …You know, I'm happy to do it. And I'll go out regardless, unless it's really raining heavily. I go out every day, Monday to Friday. Yeah, I hate being home, locked in and not getting out.*

For Loretta too, "going out a lot of the day" had become important in helping her feel less gloomy. Even so, the loneliness of her house presented an ongoing struggle to make herself feel safe against the possibility of an intruder: "I'm always frightened someone's going to break in." Likewise, to resist fears of being "a sitting target," during the daytime at least, Kate aimed to go out daily to places where: "I'm around other people…, and I feel a bit more protected" than at home, but also spoke of needing "to be very careful too about people on the street … [because] there's a few bad characters that hang around" her neighborhood. Participants variously described amenities such as the local library, church, shopping center, a neighborhood community center, or travelling the city by tram as their sanctuaries away from home.

In a different way, getting out of house or neighborhood was also a strategy for dealing with a sense of feeling "the odd one out" (Janis), or not having found one's niche, and the ensuing sense of isolation:

> Janis *You do get cabin fever round here, you need to get out of the area … To get a bit of alternative culture and life and see gay people, you really need to go somewhere like that to feel grounded … to feel grounded in your sexuality and being in a community and stuff like that, you really need to do that every couple of weeks… 'cause out here you feel really isolated and that's a really big issue.*

It's Not Four Walls

For participants who described being home as challenging, getting a cat or dog had been instrumental in turning a place to live into a home and making life easier, as Kate described.

> Kate *I'm a lot happier now that I have a cat … She's made a huge difference to me 'cause when I used to come home, I used to try … I'd have to be in someone else's place, like I couldn't be on my own. Since I've had her, I'm not as bad. You know, she's my baby and I just want to be with her. … And she does funny things. She makes me laugh sometimes. It brings you out when you're feeling down in the dumps. …it's great to come home to someone, well or come home to a cat. … I know there is something waiting for me here. It's not four walls.*

For others, pets were special companions at home and meant not "being stuck in the house" without company (George): "like I'll lie on the couch, he'll come up and lie beside me, or if I'm down, he knows, he'll come jump on my lap and start licking my face to cheer me up." As Janis further elaborated:

> Janis *It's like the place just seems empty when [my dog]'s not here. … I know she's only a tiny little thing but just having her running around, or jumping up on the couch with me. It's just this constant companion you know and when she's not here, the place is just desolate.*

Balancing Self-Determination and Need for Support

When talking about their support workers, participants described different experiences, ways of viewing and using the available support. Valuing support as well as autonomy and self-sufficiency meant also some ambivalence regarding the need for support workers. Mostly, participants valued a helping hand from services to navigate difficult times and transitions. For example, Peter described community mental health staff as supporting him to transform a "very unhappy life" with "a helping hand to pull me out of that nightmare" (Peter), and in Diane's words: "really without them you just couldn't get through it."

Qualities emphasized in this kind of support were a sense of genuine caring and service providers doing their best to help; and service providers being people who participants could relate to and who were respectful: "[she] treated me like a human being, treated me like a real human being" (Felicity). This included staff who valued their perspectives and worked *with* participants. As Janis elaborated:

> Janis *It is really good that she [outreach support worker] takes me out 'cause I don't have to worry about concentrating and we can go to places that I might not be able to take myself … Because of the drugs and everything, I can't concentrate a long time. Yeah, so [she] is great like that. …she's really helpful too when I can't drive at all and she'll take me grocery shopping or whatever. And when I get out of hospital, like going back into the supermarket and things like that, it's really hard. … she'll go with me and get me back on my feet.*

Furthermore, as Elvis illustrated, his almost daily contact with staff of an assertive outreach team helped him to keep the voices at bay and gave him practical strategies for getting through the day:

> Elvis *That's one of the biggest structures in my day. If I didn't have [outreach team], I'd be pretty loony. I wouldn't be very healthy. …It's nice to hear from them, you know. It's someone to talk to. It's stopping the voices. If you gettin' really bad, you can tell them about it. … He [case manager] kind of regulates you. He says, 'I'm going to send you to a park, I'm going to send you on a walk.' And he just keeps you [going], he's pretty good that way … I like him a lot.*

Support workers were seen too as creating conditions in which participants could go forward with rebuilding their lives or more like mentors. For instance, as Maria described, she had been encouraged by her support worker to rediscover thinking of herself as a person: "You're Maria with the mental illness, you're not just a mental illness" and had learned to view her support worker as a resource:

> Maria *It's taking the staff's wisdom … taking it in and on board and applying it as much as I can to my life … learning [from my support worker] that I had dreams as much as she's got dreams. …We've come a long way me and [support worker] from me not just looking at her as a staff, and just a person that's there that gets a wage and that's it, and what do they really care? They've got everything, and I've got nothing, and what do they really care? …to yeah, they're doing a job but really using their knowledge and wisdom … getting as much as I can out of them. Like okay, I'm not here to bag 'em, I'm here to learn how they talk. I'm here to learn how they say I like and I choose and I am.*

Conversely, from participants' perspectives, service providers sometimes seemed either to underestimate or misunderstand the place of "keeping things settled" when they appeared to be doing well, in order to support moving forward with their lives. For instance, with three years of unsettled and difficult times behind her, Emma described:

> Emma *I was going along alright and then the doctor told me I was gonna be discharged from the [outreach] service and then I went downhill … she's done it twice, like tried to discharge me, and both times I've got sick. … what has been known for me is, like with stress and change and stuff like that, I just go down. … I've been through a lot over those years, like changes … So yeah, I'll just stay where I am I think, until I'm sort of really comfortable.*

Similarly, Julie described "everything's settled down" after some years of upheaval in her life, being keen to "keep things stable" and not push herself too quickly: "I just feel really content at the moment, the way things are. I'm not going to push myself to the next step or anything, just stay the way I am at the moment."

DISCUSSION

Findings from this study align with the well-documented preferences of the majority of consumers to live in their own housing, and with persons of their own choosing (6). They are also consistent with previous research indicating the value of establishing a place of one's own for the sense of freedom, personal space, and privacy gained, and in supporting recovery (2, 17, 36). Wide-ranging personal and contextual factors contributed to participants' experiences of their housing, with feeling at home in their own house and in their neighborhood each seeming important. Indeed, home held many of the same meanings for people experiencing mental health issues in this study as widely held in communities, as noted elsewhere (6, 37). That is, their homes signified personal space, security, privacy, a refuge, and freedom to pursue their own interests and activities. A "home" is likely to be particularly potent for formerly homeless people (13, 37), yet, the desire for these elements of a home was both tangible and difficult to secure for those participants in this study who, for lack of other options, lived with parents and in transient living arrangements.

Transitions

Moving into their own places, whether in public or rented housing, was typically transformative in participants' lives and supports the view that housing is an influential factor in the process of recovery (36, 38). Previous qualitative metasyntheses too have suggested getting a home can be a positive turning point (17) and an important base from which to rebuild one's life (2). Housing transitions are also known to be more frequent among people with persistent mental illness compared to the general population (11). While the majority of participants in this study had been in their current housing for 2 years or more, their experiences of housing transitions were diverse and variously followed an inpatient stay, managing homelessness, living in a supported group accommodation, or living with parents as the consequence of having been unwell. As Krotofil et al. (6) noted, experiences of specialist mental health staffed supported accommodation that emphasize moving on may signify growth, opportunity, and support recovery, but time-limited accommodation may not only be experienced as creating disruption, uncertainty, and stress but may also work against human needs for security and familiarity (39). For participants in this study, the freedom, space, and privacy of their own place were transformative irrespective of whether they had moved from a residential service setting or their parents' home and whether their home was a temporary or ongoing housing arrangement.

Lived experiences of housing are more dynamic than a focus on either being housed, moving out of hospital, or from homelessness to housing might suggest (37). Hence, as participants in this study illustrate, experiences of being housed and making a home need to be understood within an ongoing life story, in which significant disruption or displacement may have occurred. Less has been written about lived experiences of moving between living situations over time than experiences of transitions to community living following an inpatient stay. Nevertheless, a recent systematic review of research on the latter by Mutschler et al. (40) highlighted several conditions necessary for transition that were also highlighted by participants in this study. Specifically, in common with participants in this study, Mutschler et al.'s review emphasized the importance of safety, supported autonomy, and opportunity to engage in activities that support connection to others in one's community. Also consistent with Mutschler et al.'s (40) review, participants in this study described moving between living situations as daunting and presenting varied challenges related to having limited financial resources, living in poverty, and interpersonal challenges in one's immediate living environment. In addition, participants described struggling and active efforts to improve their housing situations that were similar to the hard work reported by mental health consumers seeking housing assistance in an Australian study by Honey et al. (1). Family members, case managers, and outreach support workers were all noted too as crucial ongoing supports in facilitating ultimately successful transitions.

Neighborhood Experiences

The findings of this study highlight the power of neighborhood experiences to contribute to individuals feeling at home, making a home life, and supporting recovery. Strikingly, a sense of familiarity or longstanding connection with a neighborhood seemed to enhance participants' sense of being at home where they lived, as did proximity to amenities such as public transport, shops, and opportunities for interactions with other people. This supports the view that further exploration of how people relate to places, as well as the resources available to them locally, are necessary to understand the relationships between place and health (41). Further, settling into neighborhoods experienced as safe, and in which encounters with friendly, accepting, and respectful neighbors occurred, were transformative. This is consistent with previous research indicating that positive neighborhood relations and perceived neighborhood safety are important to individuals feeling that they belong, are accepted, and to their well-being (42). It also suggests the role of "place" merits further consideration in research and practice informed by recovery frameworks (43, 44). Furthermore, beyond neighbors providing informal supports, opportunities for reciprocity in care and support were evident in participants' stories of positive interactions with neighbors, perhaps most notably for parents with young children.

As in previous housing research, participants in this study reported both positive and negative experiences of interactions with neighbors (1, 45). The neighborhoods of people experiencing persistent mental health issues have previously been reported to be of poorer physical quality, and to have higher levels of crime than other neighborhoods in Australia and elsewhere (10, 46). This is particularly an issue in Australian neighborhoods dominated by social housing (1). Not surprisingly then, safety and security are reported as prominent concerns in urban settings (47), with poor neighborhood relations including threats from neighbors and strangers and perceived lack of safety thought to be important in accounting for distress (48). As well as hostile interactions with neighbors, participants in this study reported interactions with estate agents, landlords, and housing services as challenging or intimidating and a source of additional stress. Consistent with Honey et al.'s findings, social and economic disadvantage associated with mental illness were key reasons that participants sought housing assistance and support, but they also felt disempowered by the authorities and bureaucracies on which they were reliant. This points to the need for new ways to interact with and support people seeking assistance in relation to their housing and financial situations, which promote feelings of safety and security rather than undermining them. For instance, participatory approaches might involve the peer workforce to develop housing supports that address locally relevant needs for information and support related to tenants' rights, access to effective advocacy, and assistance in navigating issues with neighbors, landlords, and housing and welfare bureaucracies (1).

Strategies for Resisting Social Isolation and Loneliness

Lived experiences of loneliness are reported across communal and individualized housing settings (6), and findings in this study align with previous research highlighting that living by oneself can be challenging (2). Few other studies have identified specific strategies used by people experiencing mental health issues to manage these situations, yet participants in this study identified active strategies for managing living by oneself and being ill at ease when at home. One recent Canadian qualitative study by Piat et al. (49) reported that capacity to reach out to others, engage with family, and keep busy were strategies used to manage loneliness by tenants living in housing with outreach support. In comparison, the strategies of participants in this study centered on getting out of the house to be around other people, rather than solely for the company of friends or family. Hence, participants in this study appeared to actively use their time in ways that supported self-managing their living situations by seeking out community arenas where other people were likely to be encountered. At the same time, use of this strategy was dependent on access to these arenas or available public transport for getting out and being around people, factors not necessarily routinely considered in planning and organizing housing support services or the actual location of social housing.

Pet ownership too afforded more ease at home for participants in this study living by themselves, a number of whom highlighted their pets as having transformed their capacity to be at home. The ways in which pets provide companionship, emotional comfort, and support in assuaging feelings of sadness, loneliness, and upsetting experiences, and sometimes create a bridge for making social connections in neighborhoods have been reported elsewhere (50–52). More rigorous research is needed to better understand how pets contribute to mental health (50). Nevertheless, the importance of pets in the home lives of people experiencing ongoing mental health issues may be under-acknowledged as a source of support for mental well-being, and consideration of pets needs to be routinely part of collaborative care planning in mental health services (53).

Implications for Supports

Evidence from this and previous research points to the need for greater focus on the provision of housing with outreach support to align housing services with consumer preferences and recovery-oriented practice principles, so that opportunities to have a home, with its associated potential for achieving well-being, are made more widely accessible. In comparison to research on housing preferences, housing characteristics, and their relationships to consumer outcomes, the nature of the outreach support in practice is relatively under-researched and its most effective components in need of more rigorous research. The findings of this study underscore previous reports that indicate support workers who demonstrate care and respect for the person are valued, together with support that is collaborative and provides practical assistance personalized to the individual's situation (2, 10, 39, 54). Further, these findings extend understanding of what is helpful in housing-related outreach support and might be evaluated in future studies. Specifically, the importance of information and support to navigate issues with neighbors, landlords, and housing bureaucracies is highlighted. Supports could usefully extend to addressing neighborhood concerns, harnessing natural supports and opportunities in communities for getting out to places with possibilities for being around and interacting with other people (8, 10, 39). This type of practice may be constrained by how the scope of housing-related support is understood within services, and require additional resources to facilitate progress (39). Nevertheless, to promote satisfaction with housing and well-being, emerging evidence suggests designing housing services in such a way as to facilitate opportunities to engage in satisfying occupations, social interaction, and to access information and support is important (8).

This research also underlines the need for workers to flexibly adjust the support provided to respond to the housing-related challenges faced by people experiencing mental health issues while also fostering their autonomy (39, 55). In addition, the impacts of potentially losing either the safety net provided by income support or ongoing housing support deserve better recognition as factors undermining stability in housing and well-being. For people with ongoing mental health issues, poverty and social exclusion co-exist and make each other worse (56), so that both need further research to better reduce their impacts on individuals' everyday lives and well-being.

Limitations

This study may be considered limited by being located in metropolitan Melbourne, albeit that it included participants living in diverse neighborhoods from inner city and outer urban suburbs. Nevertheless, they may not be representative of the nature of housing and support services available in the urban areas of other Australian cities, or internationally. Likewise, all participants in this study had access to mental health services, so that the views of people experiencing mental health issues who are not in contact with services are also not represented. Similarly, the findings do not include the experiences of residents of supported group accommodation. Further, men and women appeared to speak somewhat differently about their housing experiences in that men tended to frame their struggles to secure satisfactory housing in relation to their efforts to rejoin the workforce or to seek better paid employment, while women described day-to-day struggles in relation to family and raising children in greater detail. However, there was insufficient data on these topics to interpret them as gendered issues. Future research could usefully attend more closely to how gender and other social attributes shape lived experiences of housing and neighborhoods, so as to design supports that are responsive to diversity in people's needs and concerns.

The study also has a number of strengths. The creation of conditions for listening, fostering dialogue, and working together are critical processes in participatory research (19), so that the extent of engagement with people experiencing mental health issues was pivotal in keeping this research closely connected with a consumer perspective of the issues being explored. Specifically, the participatory reference group provided a space for dialogue, decision-making, debriefing, reflection, and interpreting the findings, which served to enhance authenticity in representing participants' views. In addition, follow-up interviews enabled a collaborative member checking process, whereby individual participants reflected on their stories with the first author.

CONCLUSION

Drawing from participatory research undertaken with people experiencing mental health issues living in an Australian urban community, this paper illuminates housing and neighborhood experiences that contributed to or challenged participants' sense of being "at home" where they lived. The findings underline that lived experiences of being housed and making a home can be transformative processes; they also highlight active efforts and strategies used by people experiencing mental health issues that warrant further research. Given the significance of pets in people's lives, recognition of pets in care planning is suggested. The findings provide insights into how the possibilities for feeling "at home" were contextualized by participants' experiences of neighborhoods. This underscores that more explicit attention to neighborhood safety and access to amenities in the development of housing options, and to harnessing supports for people experiencing mental health issues to navigate issues with neighbors and housing are each required. Furthermore, it highlights that the role of "place" in facilitating recovery merits further consideration in research and practice.

DATA AVAILABILITY STATEMENT

The datasets generated for this study are not available. Ethical approval for wider sharing of the datasets was not granted in the interests of protecting participants' privacy and confidentiality.

ETHICS STATEMENT

This study involving human participants was reviewed and approved by the Human Research Ethics Committees of The University of Melbourne (HREC 020595), La Trobe University (FHEC03/070), and North Western Mental Health (E/02/001). The participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

AUTHOR CONTRIBUTIONS

EF designed the study, with guidance from the co-authors (CH, FM) and the participatory reference group (also known as the Participating Lives Project Reference Group), of which CH and FM were members. EF interviewed participants and analyzed the data, informed by the participatory reference group perspectives. EF drafted the manuscript. CH and FM reviewed, revised, and added material to manuscript drafts.

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Experiences of Recovery in EPAPSY's Community Residential Facilities and the Five CHIME Concepts: A Qualitative Inquiry

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In the context of the reform of psychiatric services in Greece, the debate about the concept of recovery is still growing. Recovery is defined as a path through which individuals facing mental health challenges are enabled to regain and further develop significant relationships with family, friends, the community, and themselves and at the same time to cope with the detrimental effects of stigma through empowerment. The present qualitative study aims to explore the experiences of people living in EPAPSY's (Association for Regional Development and Mental Health) community residential facilities focusing mainly upon the key concepts of the CHIME (connectivity, hope, identity, meaning, and empowerment) conceptual framework of recovery. To this end, semi-structured interviews were conducted with seven participants living and receiving mental health care in a residential facility of EPAPSY. The participants' accounts were analyzed using thematic analysis in a deductive and inductive manner. The research findings highlighted, among others, the challenges the participants faced during their early years in family and school, the experience of the revolving door effect, and the perceived turn their life took when they were transferred to a community residential facility, thus opening a new chapter in their lives. Of the five CHIME concepts, all are present in the participants' accounts, with emphasis given to a meaningful present, a need to feel "normal" again, and a positive outlook for the future, both for themselves and their relationships, despite the persistence of certain difficulties.

Keywords: recovery, CHIME model, community residential care, qualitative inquiry, thematic analysis

INTRODUCTION

In the context of the reform of psychiatric services in Greece, the debate about the concept of recovery is growing, as in many other European countries (1–3). Core values of the recovery model, as they will be presented below, but also the WHO and European Union (EU) directives and guidelines for the organization of mental health services (4–7), all highlight the importance of developing and implementing policies and strategies that promote the active engagement and participation of users of services and their family in the mental health system. As Amering [(8): vii] suggests:

> *"recovery demands all our best efforts in terms of human rights, patients' rights, scientific and clinical responsibility and service, in the interest of those of us who might become patients and those who have. We learn from those who are using services, those who have used services (ex-users) and those who define themselves through overcoming harmful experiences in the support system (survivors)."*

Recovery is often seen as a philosophy, a critical way to approach mental health. Describing the conceptual framework of recovery has been difficult and for this reason, research on issues of implementation strategies and techniques, effectiveness, and limitations has started to grow only during the last decade (9, 10). For Spaniol and Koehler (11), recovery is defined as a path through which individuals facing mental health challenges are enabled to regain and further develop significant relationships with family, friends, the community, and themselves and at the same time to cope with the detrimental effects of stigma through empowerment. Necessary aspect of the recovery process is refinding and reconstructing a new meaning in life for the person struggling with mental health challenges (12). Based on the definition proposed by Deegan (13), recovery refers to the real living experience of the people receiving mental health care. Leamy et al. (14) have suggested the CHIME (connectedness, hope, identity, meaning, and empowerment) model of recovery as an explanatory framework. CHIME is the acronym for connectedness; hope and optimism about the future; identity; meaning in life; and empowerment, as basic components comprising recovery.

Each of these five concepts comprise of a number of different but interrelated notions (15). Starting with connectedness, the concept includes the support provided by peers and others, the user's active participation in the community, as well as the development of meaningful relationships with family, friends, and other individuals. Hope comprises of a positive outlook for the future ahead, a deep-seated belief in the possibility of recovery, finding and keeping motivation for change, sustainment of hope-inspiring relationships, an overall optimism for life and personal development, as well as having dreams and aspirations for life. Identity deals with agency and personal responsibility, the perceived capability to escape from something undesirable and overcoming stigma, and an overall re-creation of the self. Meaning comprises of finding goals and social roles in life, constructing a personal understanding of mental illness, finding spirituality, and leading a life with quality. Finally, empowerment is described as the development of personal agency and control over personal choices, with particular attention to each person's strengths and the ability to regain control over personal health care (15).

In Greece, research on recovery is extremely limited. On the contrary, in Europe and the United States, the number of reviews is growing on various aspects: conceptual approach (14, 15), implementation strategies (16–19), measuring, process and outcome evaluation (10, 20, 21), and the role of professionals and users.

Leamy et al. (14) undertook a review study in order to gather, compare, and organize the available literature on models of recovery. A modified thematic synthesis based on the papers of this review identified 13 characteristics of the recovery journey that form the CHIME processes. A short version of INSPIRED tool (17) is discussed that can cover the CHIME dimensions (22). The Questionnaire about Process of Recovery (QPR) (23, 24) is considered to contribute to the investigation of the CHIME framework. A literature review by Shanks et al. (25) aimed at identifying measurable key factors of recovery. Their findings highlighted the QPR (24) as the most efficient in measuring recovery under the CHIME framework. Other studies investigated the extent to which services and professionals can follow the CHIME framework (17, 26, 27). It has also been used as a foundation for a new measure of recovery support from services (28).

Brijnath (29) studied the possible cultural effects on the CHIME model, focusing on two culturally diverse groups in Australia and their members' experience with recovery from depression. Using qualitative interviews and thematic analysis, she found that participants were faced with discriminatory behavior and attitudes by family members on the basis of their mental health difficulties; having a positive attitude toward their recovery from depression helped them maintain an optimistic outlook for the future; ambivalence toward medication, which was perceived both as a major help toward recovery and as a constant reminder that they will never get back to their healthy self; the indigenous group found meaning through spirituality, whereas the Anglo-Australian group constructed meaning through the experience of depression itself; and that for both groups, the notion of agency and empowerment was translated into a sense of social and economic security [(29) 664]. CHIME was applicable in both groups, but there were cultural differences in the ways that participants in each group perceive some of the key notions of the model.

Piat et al. (30) used observation and interviews in an effort to outline the way that CHIME (14) is reflected on everyday life and to highlight the contribution of the model's key notions to the recovery of individuals with mental health challenges. Their findings suggest that the CHIME model (14) can better inform our understanding of the recovery process.

Very recently, Piat et al. (31) inquired into the role that choice plays in the recovery process for persons with mental health problems living in supported residential facilities. Using qualitative interviews, they concluded that living in a residential facility strengthens tenants' ability to take personal responsibility and make choices concerning their everyday activities and routine, like cooking and shopping groceries. This, in turn, underlined their sense of regaining a "normal" life, in which their views and preferences are voiced and respected by the other tenants, staff members, and professionals. Richter and Hoffman (32) have also looked into the concept of choice but regarding the initial choice on living settings rather than everyday issues during supported living.

In other words, they reviewed and meta- analyzed parts of published studies focusing on service users' preference of independent housing facilities.

Williams et al. (33) focused on the service users' perceptions of the CHIME model notions of connectedness and hope using visual methods. Participants were asked to watch a video concerning the lived experience of psychosis and to talk about their feelings about it in semi-structured interviews. Findings showed that the experience of watching the video was quite powerful for the participants, strengthening their sense of hope and connectedness. In other words, participants felt that they are not alone out there struggling with mental health difficulties and that there is a hopeful future ahead of them, as there is for other people with the same mental health problems.

Therefore, within this framework, the present study aimed to help fill the gap in the study of recovery in the Greek context attempting to explore the experiences of individuals accessing mental health care in a community residential facility. More specifically, it adopted a qualitative approach in order to map out the experiences of people living in one of EPAPSY's (Association for Regional Development and Mental Health) community residential facilities, focusing on participants' understanding of personal recovery and pertinent themes related to the key concepts of the CHIME (connectedness, hope, identity, meaning, and empowerment) (14) conceptual framework of recovery.

METHODS

In order to adequately address the aims of the study, qualitative methodology was adopted as it offers the opportunity for the voices of individuals accessing mental health care to be heard and for in-depth exploration of their personal understanding of recovery (34, 35). Moreover, the study was informed by the theoretical framework of recovery-CHIME (14). The research was conducted at the psychosocial rehabilitation units of the Association for Regional Development and Mental Health—EPAPSY—a nongovernmental, nonprofit organization which was founded in 1988. EPAPSY is operating a total of 25 residential facilities. There is a variation between them regarding the number of residents, number of staff, if there is staff on-site, and criteria for receiving accommodation support. Out of these 25 units, 12 (protected accommodation apartments) have four residential places, there is no staff on-site, they offer low/moderate support, and there is limited emphasis on move-on and support individual accommodation [type 4 according STAX-SA, (36)]. Eight have 15 places, staff on-site, high support, limited emphasis on moving on a congregate setting (type 1). Five have 10 places, staff on-site, strong emphasis on move-on, high support, congregate setting (type 2). The number of staff varies between 13 and 27 people (psychologist, social worker, nurse, carer, psychiatrist, clinical supervisor, and administrator). One of these facilities is for adolescents (between 12 and 18 years old). **Figure 1** shows participants in the present study, main descriptive demographics, and the facility type from which they were recruited.

Sample

Participants in the present study were seven individuals (one woman and six men, 28–60 years of age), who agreed to share their experiences and understanding of recovery. They all reported previous experiences of two to four hospitalizations in various psychiatric institutions across Greece. Of the seven participants, one is female aged 46 and living in a high-support facility with limited emphasis on moving-on (type 1 in STAX-SA taxonomy) for 6 years. Of the six remaining men, all aged between 28 and 60, four live in a protected apartment for 2–8 years, and two live for the past 2–3 years in high-support settings but with strong emphasis on moving-on (type 2 in STAX-SA taxonomy). Only one is working full time, and one is a pensioner. No one is married. They all take part in team activities, foreign language lessons, training courses, and creative workshops. Participants were recruited based on convenience and purposeful sampling, taking into account their availability, ability to participate with their consent to the interview process, as well as the number of years living in the community residential facility (minimum 2 years).

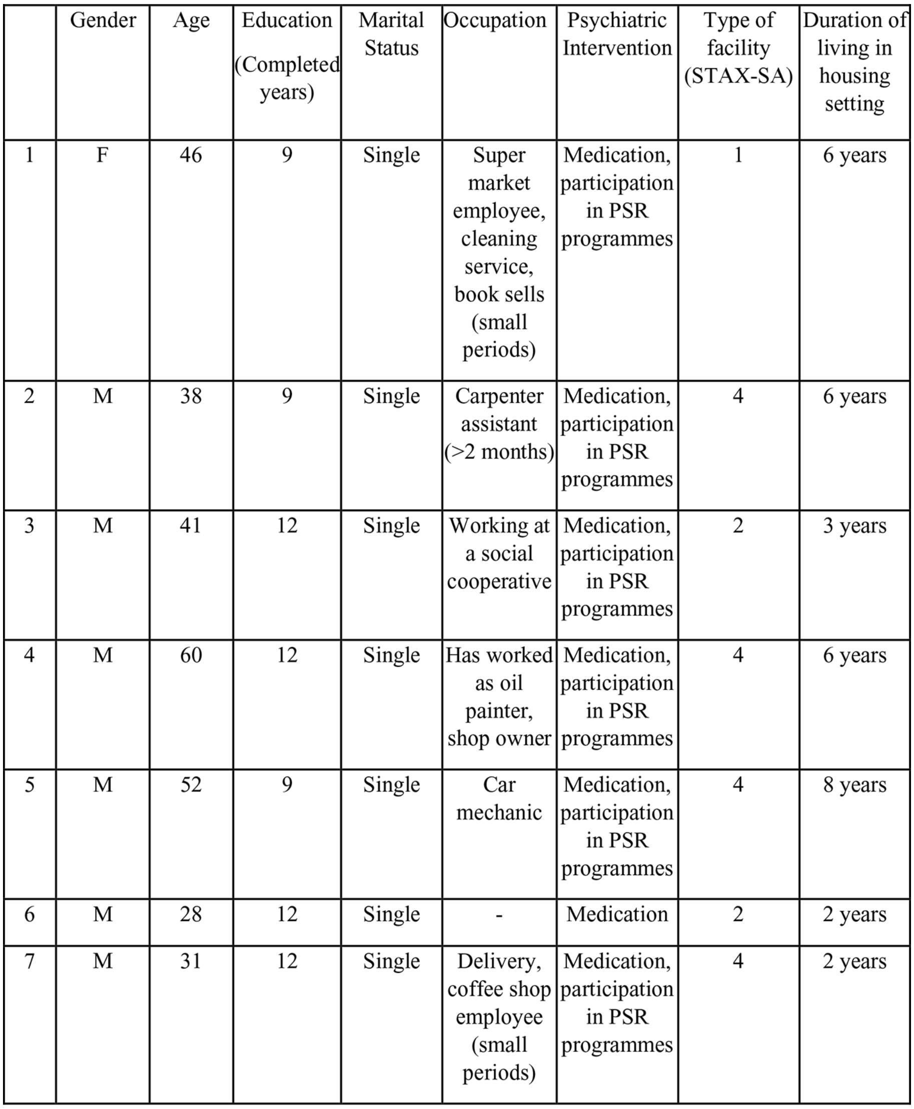
Data Collection

Collection of data was made using semi-structured interviews. Interview questions were open-ended and focused upon participants' experiences before the onset of the mental illness, their personal understanding of recovery, their present life in the residential facilities, and aspirations for the future. Interviews were conducted by members of the therapeutic team, thus providing a safe and familiar setting for participants. Acknowledging the risk of biased answers from the participants, due to the fact that their recollections and experiences where described to a member of the therapeutic personnel, it should be noted that it was considered the optimal option in order to create a caring environment that would not disrupt the participants' lives and relations. Prior to the interviews, the researchers informed the service users of the aims of the study and gave details of the confidentiality of their personal information. Interviews were recorded and transcribed verbatim so as to capture in detail participants' experiences. The interview questions centered around prior experiences with mental health challenges, hospitalizations, present life in residential facility, personal life and relationships, and plans for the future.

Data Analysis

The research material which resulted from the interviews was analyzed and categorized into main themes and subthemes in accordance with the principles of thematic analysis and the six steps proposed by Braun and Clarke (37, 38), namely, familiarization with the data, initial coding, initial emergence of themes, refinement of themes, definition and naming of themes, and reporting of findings.

In the present study, thematic analysis was conducted both inductively and deductively (39) informed by the conceptual framework of CHIME. Specifically, thematic analysis was first conducted inductively to explore the main themes emerging from participants' accounts, holding no prior theoretical or other expectations [e.g., (38, 40)]. Then, drawing on the CHIME



	Gender	Age	Education (Completed years)	Marital Status	Occupation	Psychiatric Intervention	Type of facility (STAX-SA)	Duration of living in housing setting
1	F	46	9	Single	Super market employee, cleaning service, book sells (small periods)	Medication, participation in PSR programmes	1	6 years
2	M	38	9	Single	Carpenter assistant (>2 months)	Medication, participation in PSR programmes	4	6 years
3	M	41	12	Single	Working at a social cooperative	Medication, participation in PSR programmes	2	3 years
4	M	60	12	Single	Has worked as oil painter, shop owner	Medication, participation in PSR programmes	4	6 years
5	M	52	9	Single	Car mechanic	Medication, participation in PSR programmes	4	8 years
6	M	28	12	Single	-	Medication	2	2 years
7	M	31	12	Single	Delivery, coffee shop employee (small periods)	Medication, participation in PSR programmes	4	2 years

FIGURE 1 | Participants in the study. F, female; M, male; PSR, Psychosocial rehabilitation.

conceptual framework, researchers worked deductively in order to explore the presence of connectedness, hope, identity, meaning, and empowerment in participants' experiences and personal understanding of recovery. Working deductively and adopting an "interpretation of suspicion" (41), researchers are better able to convincingly describe and situate the phenomenon under study based on a certain theoretical and/or conceptual model that defines and explains the key concepts explored (34, 35, 42).

RESULTS

The research findings reflect the experiences of people living in EPAPSY's residential facilities and more specifically the CHIME key notions relating to recovery. From the analysis of participants' narratives emerged three main themes and a number of subthemes related to the time before the onset of mental illness, the period of hospitalization, and the present life of service users living in the community residential facilities (**Figure 1**). Among other things, participants' accounts reflected notions related to the CHIME recovery framework, such as connectedness, hope, meaning, identity, and empowerment.

Before the Onset of Mental Illness

Service users described the period in their lives before the onset of mental illness and the beginning of hospitalizations. Their narratives focused upon family, school, behavior-related issues, and their socioeconomic situation.

Family

All participants seemed to have experienced family difficulties during their childhood. As one of the service users pointed out:

> "…from the beginning of their relationship my parents had problems, due to my mother's mental health issues and the fact that my father was Turk and my grandfather and grandmother could not accept him. When I was 3 years old my father left us. So did my mother, when I was 6 years old. My grandmother took custody of me, but due to her health issues [dementia] she couldn't take care of me …" [H.T.]

Another participant recalled:

> "My parents never married; I barely remember my father—he left when I was very young. I always felt my mother distanced." [CH.R.]

School

Participants also described multiple challenges experienced during their school years such as difficulties related to school attendance and the need for work, learning problems, and strained relationships with their schoolmates.

> "I went to primary school and then high school … I couldn't continue school because I had to work as a cheesemaker, because my father got sick and he couldn't work. But I was already working, I was working since I was 4 years old." [E.K.]
> "I never went to kindergarten. In primary school, which I finished with difficulty, I had serious learning problems, and I didn't have any friends, because often the other kids were making fun of me." [H.T.]

Behavior-Related Issues

As they grew up and moved through adolescence and early adulthood, a number of behavior-related issues emerged including addictive behavior, violence, and delinquent behaviors:

> *Addictive Behavior*
>
> One participant recalled that
> "… [along with my brother] we would gamble, horseraces … all the money our father gave us. I was out of line." [M.F.]

Still another described his life before the onset of mental illness and hospitalizations as a period where he only worked, used substances, and had phobias.

Violence and Delinquent Behavior

For some service users, violence and delinquent behavior were also present in their lives. As M.F. pointed out:

> "I had a girlfriend and I beat her; I was jealous of her and I beat her … I wanted her to cry…"

> "We would deceit old people … we were out of line, it is fraud, you can go to jail for it. We would deceit old people and get their money."

Poverty and Multiple Losses

At the same time, participants' socioeconomic situation was in dire straits, with poverty and multiple losses being the dominant elements in their lives.

Poverty

As S.M. narrated,

> "… at that time, I quit my job, there was unemployment, and little by little, there came poverty."

Another participant described her life in the streets:

> "… I remember living in the streets … it rained and it snowed and I had to sleep on the benches. I had a coat and I wore it and I slept alone and people would give me some change in order to get something to eat and there were "one-night lovers" who were bothering me. And the police would take me in for identification …" [M.L.]

Multiple Losses

Along with poverty, multiple losses were present in participants' lives:

> "… After a series of misunderstandings my relationship came to an end, I had a row with my best friend, I got fired, I had to leave my house … I had no money to live by and I sold all my furniture, I had lost all my friends and my relationship with my family was really bad. I decided to live in the car, which was parked outside my mother's house. But that didn't last for long, due to economic hardship I also sold the car" [CH.R.]

In all, service users drew a rather bleak picture of their past which was dominated by poverty, various losses, loneliness, delinquent/abusive behavior with outbursts and substance or/and alcohol abuse, as well as difficulties in finding and keeping jobs, social relations, and housing.

Hospitalization

Revolving Door

Participants' accounts of the period in their lives after the onset of mental illness and hospitalization stressed the circularity of the pathway chronic patients follow within the psychiatric care system, which begins with an admission to a psychiatric clinic, adhering to a therapeutic plan, exiting the clinic, relapsing, readmitting, etc., a pattern which has been described as the Revolving Door effect (43, 44).

> E.K. described the revolving door effect in his own words:

> "*… In 2004, as I was quarrelling again with my neighbors, I threw a rock at the window of one's house. So, they proceeded with the public prosecutor and I was hospitalized … Then a long time passed, during which I was hospitalized for a few months, I returned home, got into problems with the neighbors, the legal process with the prosecutor was repeated, and I would get hospitalized again …*"

This "drifting" (45) of patients in the psychiatric treatment system is associated with negative consequences for their lives, that is, reduced chances of rehabilitation, weakened belief in their ability to improve their lives and health, exacerbated unemployment, and of course economic exhaustion of themselves and their families (46).

Emotions

Another important aspect related to the period of hospitalizations was the presence of strong and negative emotions such as fear, anxiety, suffering, loneliness, suspicion, tension, and frustration.

Present Life in a Community Residential Facility

Participants reported experiences and narrated stories related to finding new meaning in their lives, positive emotions, a sense of connectedness and support networks, occupational rehabilitation, a movement toward a positive self-image, a sense of empowerment, and hope for the future associated with their residence in community residential facilities such as a boarding house, a hostel, or sheltered apartments. The service users talked about the quality in their present lives, a willingness to be alive, the acquisition of new friends, receiving support from the therapists, and having recovered their relationship with their family and relatives. Additionally, they emphasized education and work as central in their struggle to regain life and identity. As opposed to the bleak image of their past, they communicated a sense of security and normality and described the warmth they feel at present. Moreover, they talked of their dreams for the future, and they stressed the sense of independence and freedom they experience as they gain more autonomy in their lives.

Connectivity

The service users reported changes in their lives as soon as they were transferred to community residential facilities and narrated experiences that come close to notions of connectivity as proposed by the CHIME recovery framework. These included supports given by people with similar problems, help from friends acquired in the context of the residential facility, renewed relationships with family, social networks, and a sense of belonging to a community (15).

Support From Others—Being Part of a Community

In the words of Z.E.:

> "*I have support, I have solidarity, I have people who are interested … I feel that I can become a member of society, I am a part of society … I have learned how to approach people, I've learned myself … I want to be more sociable…*"

In a similar manner, M.L. commented:

> "*Here, people helped me to get myself together.*"

Along these lines, E.D. added:

> "*I would say that anyone who feels 'over-stretched,' as I did, shouldn't fight with everyone and everything, as I did, but should ask for help…*"

Another important point was made by CH.R.:

> "*Within a year, my everyday life became creative, and to that effect it was the friends that I made both inside and outside the hostel that helped.*"
>
> "*Socially, I have friends, I feel more peaceful.*" [S.M.]
>
> "*I love my friend N. [new friend, from the community]*" [M.F.]

In all, support from others and a sense of belonging to a community helped service users to regain a renewed interest in life, to turn to new activities, and to develop their creativity.

Renewed Relationships With Family

At the same time, participants described renewed relationships with their parents and siblings.

> "*…I now see my parents under a new light; our relationship was always strained. It was hard for me to acknowledge my brother as part of the family. I thought my parents were my enemies. I love and respect myself and so I feel for my family members. I believe that I can show them that. I have already seen them a few times. Our meetings aren't as they used to be…*" [Z.E.].
>
> "*Now I go for a vacation every year for one month at my sister's house at the village where I was born.*"

Hope

Participant's accounts regarding their present lives reflected a positive attitude, which stands in stark contrast to their difficult past. They portrayed notions of hope as proposed by the CHIME recovery framework referring to optimism and dreams for the future, the belief in the possibility of recovery, the existence of an incentive for change, hope-inspiring relationships, and positive thinking (15, 47). At the same time, there was awareness of obstacles in fulfilling hopes and dreams.

Positive Attitude

In the words of Z.E.:

> "*I want to find a girl, to make many trips, to dream … to have a family, to have a normal job and to earn more than I now earn, to have friends, to live in Athens, to visit and to be visited by my family regularly, to have*

> *humor, not to have difficulty expressing my feelings, to have a dog, to study, to buy a house … to have less difficulty in communication.*"

While maintaining a positive attitude toward the future, services users seemed also to be aware of obstacles and constraints to their hopes and dreams.

Awareness of Difficulties in Fulfilling Hopes and Dreams

While maintaining a positive attitude, M.F. was also aware of certain difficulties that he has to deal with:

> "*Whenever the eye symptom catches me, thoughts begin in my mind but now it catches me less. When it catches me, I try to manage it as well as possible…*"

Likewise, CH.R. stated:

> "*I see that there are difficulties in dealing with many things. I know I want a lot … I will never be able to do it all by myself, still it is the end result that counts.*"

Along these lines, even though M.L. was able to express her hopes and dreams for her future, she situated their fulfillment in the distant future:

> "*For the future, I wish I were a housewife with my husband, in our little home, going for a walk on Sundays, both having a job, and having our home open for our friends and sleeping without voices … to be friends with other couples … But this dream is far away…*"

Identity

Service users' narratives reflected also the process of redefining the self-image through a positive light and overcoming the stigma of mental illness (14). Although the notion of identity seems to overlap with other concepts of recovery as also noted by Stuart et al. (15), renegotiation of a positive image for the self seems to be an integral part of the recovery process—and of identity change. In our study participants, assumption of responsibilities, the feeling that they were active members of society, a sense of agency in their social and family relations, reclaiming normality, and occupational rehabilitation seemed to result in regaining control of their lives, which in turn strengthened their sense of identity and self-worth (15, 48).

In the words of CH.R.:

> "*… I have more responsibilities but more freedom. I feel more secure and it's like I live again on my own, I now have my own keys for the house. It is an important step in my life … Things are getting better for me; I feel my life is on a pleasant track.*"

For CH.R., acquiring his own keys for his home seemed to act as a confirmation of his existence as an autonomous and independent member of society which gave him a sense of joy. It is this sense of freedom and personal agency that also paves the way for a redefinition of personal identity (49).

The process of consolidating a positive self-image is also reflected in the words of Z.E.:

> "*I now love and respect myself, and my family members. I think I can show it to them.*"

For S.M., a good self-image is associated with the notion of normality:

> "*I feel like a normal person again … I feel good for all new things happening in my life … I feel I have a normal life …*"

S.F. talked about a positive sense of identity acquired through occupational rehabilitation:

> "*In 2014, I opened the shop … a gift shop. I have decorated the space on my own, it has frames, jewelry, decorative items, everything. I began a new chapter, I felt really good. Immediately the problems disappeared and I felt good. It was a good experience for me. I felt like a normal person, I had no mental health problems, there was nothing stressing me … During the summer of 2017, there was another chapter, the social cooperative X. I got elected as vice president … I believe everything will turn up right …*"

Along these lines, E.K. reported that he was involved in a social cooperative, a place as he said "*where there may be a job opening for me to work at …*"

Similarly, CH.R. stressed the importance of acquiring a job:

> "*I want to work again, I talked to some people … to find a job. I found a subsidized bakery–pastry seminar for three months, which I successfully completed. Things got better for me and I feel that my life is turning good for me and has meaning.*"

Almost all participants talked about the value of work which seemed to strengthen their sense of independence, agency, and personal responsibility, making them feel as active and important members of the community and contributing to meaning making.

Meaning Making

Within the CHIME framework, the concept of meaning refers to the process by which people regain a meaningful life, understand mental illness and the difficulties surrounding it, turn to spirituality in order to form a framework of understanding and explanation of their lives and experiences, seek an active role in society, and work toward their well-being (15). In our study, the service users emphasized the value of meaning-making activities and experiences. After their transition to a community residential facility, participants got involved in a series of activities which were meaningful to them and promoted personal well-being and quality in their lives. Moreover, they contributed to a sense of responsibility and agency that helped them develop a new awareness of their possibilities and strengths as well as an active role in the community.

> "*We are doing fine … We have our daily routine, we come to the boarding house for our medicines, we go to the bakery, to the butcher's, to the supermarket, we go out for coffee. I'm responsible for the daily cooking, I write down everything we will need from the supermarket, and the other two are doing the cleaning*." [E.K.]

> "*…I find pleasure in various activities, like vacation, visits to other places and team membership. At the same time, I haven't stopped 'hunting' for a job*." [CH.R.]

> "*I have warmth, I have my bed, my food, my activities. I feel like I have a family now … I am grateful … Thanks to the activities I get to know people, I learn something and my mind gets smarter. I can speak a little English, since I'm attending English lessons. I can play a part in a theater play with a false face … it means pretending to be somebody else. Comedy, that is. Comedy helps me, because drama doesn't help me that much. Drama makes you cry, whereas it's better to laugh*." [M.L.]

> "*I have quality in my life, I like living and that's a bit new to me … I'm happy for every new day dawning; I didn't feel that in the past … I feel that I can become a member of society, part of society*." [Z.E.]

We are reminded of Yalom (50) words related to meaning seeking, engagement, and existence:

> "*To find a home, to care about other individuals, about ideas or projects, to search, to create, to build—these, and all other forms of engagement, are twice rewarding: they are intrinsically enriching, and they alleviate the dysphoria that stems from being bombarded with the unassembled brute data in existence*" (p. 482).

Empowerment

Empowerment refers to the process by which the individual regains control of his or her life, assumes personal responsibility for himself/herself, and invests in the positive elements of his/her personality. Empowerment emphasizes that it is not enough to have a supportive network, but that each individual needs to actively seek to regain and change his or her life (15).

As reflected in M.F.'s account:

> "*… in the apartment, I was more comfortable, more constructive … I wanted to do things to feel better. I went to the gym … in the past, gym was not for me, I was not going. Did it help? Yes, very much*."

Z.E. also talked about exercise, among others things:

> "*… I learned myself. I keep reminding to myself what the staff told me about how to be confident. I go to the gym, I participate in different teams, I have developed interests in my life. Unusual feelings of love for life…*"

The role of exercise in the empowerment of chronic patients is also reported by Leamy et al. (14), thus indicating the embodied aspect of recovery, which is not confined only to mental activities and changes, but actively involves in the process the whole body of the individual.

Empowerment also includes the ability of self-care and self-organization, as described by H.T.:

> "*I now have a better understanding of the value of money, not to waste and to do planning … I see the reality … I am organizing better in cleaning, cooking, I can manage better and more easily my transactions with the social services. I can now largely control my mouth, my anger. I have more patience and responsibility. I have set limits to myself.*"

In **Figure 2**, a schematic presentation of the research findings is presented.

DISCUSSION—IMPLICATIONS OF THE STUDY

The present study explored the experiences of service users living in EPAPSY's community residential facilities, taking into account a personal understanding of the recovery and the CHIME conceptual framework. Research findings revealed service users' lived experiences before, during, and after hospitalization, as they described their early years at home and at school, later on the onset of mental illness and their drifting through the psychiatric hospitals, and finally their transition to a community residential facility and their lives at present. With regard to the CHIME model, findings of the study confirm the five key notions of the model as important aspects of the recovery journey of people with mental health challenges. Specifically, it addresses the subjective aspect of the lived experience of each service user, which lies at the core of every recovery framework (51). Participants underline the sense of freedom they now feel and the personal control they have regained over their everyday life and decisions, emphasizing a sense of positivity and optimism for the future, standing in stark contrast to their bleak and difficult past. Their accounts revealed a developing self-understanding in relation to their biographical experiences, an expression of gratitude for their present life, an appreciation for the present quality of life, and a sense of meaning making and well-being. Their narratives also expressed hopes and dreams for the future and portrayed a personal understanding of mental illness and recovery, a growing sense of autonomy and ability for self-care and self-management skills. Moreover, there was recognition of the importance of relationships and social support. Additionally, as seen in **Figure 2**, the accounts seem to change abruptly from one point on; before their move into a

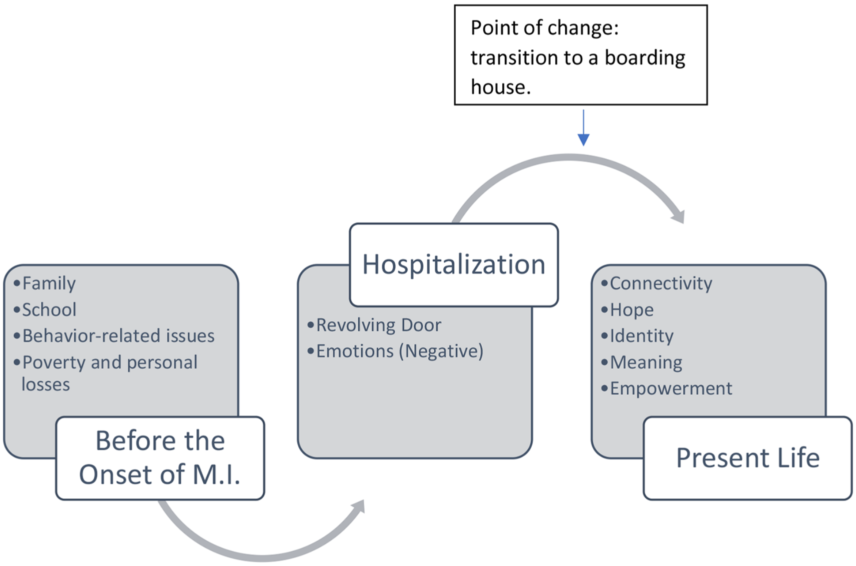


FIGURE 2 | Schematic presentation of the research findings.

housing facility, they remember a life of negative feelings, multiple losses, sadness, and drifting in and out of psychiatric hospitals. After their move to the housing facility, their accounts change to a positive attitude of hope. Although themes such as childhood and school years may at first seem irrelevant to the CHIME model, still they are especially valuable in that they inform participants' life and the meaning they attribute to their personal experience, as well as our contextualized understanding of their lifelong journey before and after the onset of mental health challenges.

Given that the change in participants' accounts begins after their move in a boarding house, it seems likely that the provided services had an impact on their recovery. Described as an "in-between place" (51), services and staff training in boarding houses should therefore be carefully studied and organized in order to ensure an effective and sustaining start in the recovery path of people with mental health challenges. Moreover, participants stress the importance of employment and of independent living as major motives and goals for their life, as well as relationships and an identity of "normality" as key factors of their present life. To that end, available services should be well-trained and properly equipped to provide for occupational education, training, and employment, investing in and refining strengths and available knowledge to the benefit of service users. Given the community perspective and the ongoing stigmatization of mental illness, available residential facilities should also work toward minimizing discriminatory attitudes and behaviors in the local population and the service users' families through informative programs and open communication channels.

Onken et al. (52) have commented on the positivity associated with recovery-oriented practice and caution that there is a risk that the recovery process may be considered simple and easy for everyone involved. In our study, a positive outlook seemed to coexist with only a slight reservation and with an awareness from the part of the participants that there are obstacles and constraints (e.g., the presence of mental illness and symptoms, reduced ability for a full and complete autonomy and/or independence, work-related obstacles) that could make difficult or postpone the fulfillment of their hopes and dreams. This optimistic view runs the risk of being misinterpreted both by service users and researchers alike. Recovery is not an easy process, and results are never uniform or positive for all users. Moreover, providing recovery services which highlight only the positive aspects of life fails to acknowledge the hardships and the crises that may inflict the lives of all people, at any time, thus remaining overprotective of service users and unrealistic in regard to the expected results. It remains unclear if, in the present study, this uniformity of accounts on the positiveness reported by participants is due to the fact that they were individuals trying to please their therapists, to the participants' sense of gratitude toward the residential facility, or in fact to a more pragmatic and realistic sense of personal progress and well-being on behalf of participants. Given the negative picture the participants draw on their early years and the period of their hospitalizations, it is possible that their transition to a community residential facility and from there on to a more independent but still protected and more "normal" environment provides them and their accounts with an overwhelming optimism. Nevertheless, the positive outcomes should not lead us to believe that recovery can take place even without the intervention of quality mental health services provided by competent professionals.

In addition, research results indicated that there was some overlap among the notions associated with the five key concepts proposed by the CHIME recovery framework indicating an interconnectedness and complementarity in the context of the recovery process.

Since all recovery processes start with the professional and nonprofessional staff, emphasis should be given in the attitudes of the personnel toward mental illness and the training required to accommodate the needs of the service users. Le Boutillier et al. (53) found that there is no clarity over the theoretical aspects of recovery services provision among personnel, making it hard to discern between the needs of the service users, the needs of the health system, and the needs of the organization. This confusion inhibits the flow of the recovery process and obscures the priorities of the service users. The present study offers a multitude of insights regarding the needs of mental health services users, which can be used in order to inform professional and nonprofessional staff of their core priorities and wishes.

Taking into account the possible benefits for recovery-oriented practice, this seems to be a very promising approach, worthy of further inquiry. Research into the process and meaning of personal recovery is especially important for the continuing development of clinical mental health and recovery-oriented mental health community services. Further qualitative research on the subject in other mental health community residential facilities would also support transferability of the present findings.

Limitations

The present study is the first in Greece to attempt to inquire into the CHIME recovery model and the lived experiences of people with mental health challenges who live in EPAPSY's residential facilities. As such, it contributes to our knowledge of the community work being done in the country, having nevertheless certain limitations which provide ample questions for further investigation.

On the methodology applied, the use of participants' therapists as interviewers may have risked the collection of accounts biased toward a positive extreme. Nevertheless, it was considered the best available option in order not to disrupt participants' lives and relationships. Given that other qualitative methods, such as participatory observation or using experienced therapists as interviewers, could have been used, it remains open to further qualitative studies to inquire into similar research questions in order to enrich our knowledge of the experience of people facing mental health challenges of the recovery processes in Greece.

Furthermore, the study did not take into account other variables of the recovery process, such as the quality of relationships with the clinical staff, clinical aspects of the recovery, as well as personal elements, such as the motivation to change or their level of cognitive abilities.

Reflecting upon our sample, we consider that it could be larger. Nonetheless, qualitative methods focus on an in-depth understanding of the personal experience, and they do not aim to generalize results; instead, their aim is to inform our understanding of the phenomenon under study and to offer new questions for more focused research (54). Still it should be noted that the small number of participants is due to the fact that researchers asked for participation of only high-functioning service users, able to narrate their life story and to reflect on their experience. If we had the possibility to recruit more participants, richer and more varied accounts would have been reported. Furthermore, the sample is skewed gender-wise due to the fact that sampling was convenient and the individuals who consented to participate were mostly men. Accordingly, due to the small sample, we were not able to achieve data saturation.

DATA AVAILABILITY STATEMENT

The datasets generated for this study are available on request to the corresponding authors.

ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. The patients/participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

AUTHOR CONTRIBUTIONS

AAp conducted the thematic analysis, the writing of the findings, and the discussion and coauthored all sections of the article. SS did a critical revision of the article. PI oversaw the methodology of the research and coauthored the methodology, research findings, and discussion sections of the article. PC had the initial conception of the work and coauthored the introduction and literature review sections. AAl, PB, CG, EK, VF, and FT conducted collection of data.

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Housing Orientations and Needs of Above-Average Length of Stay Hospitalized Psychiatric Patients

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A small number of severely and persistently mentally ill in-patients awaiting residential or long-stay facilities represent an obstacle to the efficient utilization of acute care beds. These facilities are costly and currently reputed to be contrary to recovery principles. In 2013, all acute psychiatric care wards in Montreal identified 194 in-patients who could be discharged to residential or long-term nursing care facilities. Program clinical professionals of regional residential facilities sent adapted standardized questionnaires to ward staff. Evaluators also collected the residential preferences of both staff and patients, and then made their own assessments. The 194 in-patients were mostly middle-aged single men. Over 80% had a psychosis diagnosis and half had judicial constraints. The staff evaluated that 71.1% could be discharged from hospital within 24 h. Of these, 55% could be referred to group resources with continuous 24 h, 7 days a week staff presence, 32% could be transferred to apartments with 7-day continuous or non-continuous staff presence, 12% could be transferred to institutional care and only 2% could be moved to an apartment of their own. Evaluator and ward staff residential preferences were highly similar, but differed with patient preferences, half of whom prefer their own apartment. Discrepancy between staff evaluations and patient preferences were higher for longer stay patients with more severe symptoms and comorbidity of personality disorders.

Keywords: housing, residential care adults, needs, mental health, hospitalization

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INTRODUCTION

A balanced mental health care system for severely and persistently mentally ill patients in a resource-rich country like Canada includes several treatment and rehabilitation components: community mental health team (CMHT), intensive home care intensive home care (IHC)—including intensive case-management team (ICM) and assertive community treatment team (ACT), residential facilities and long-term hospitalization, forensic psychiatric beds, as well as occupational facilities (1). Over the past decades most industrialized countries have had similar experiences of downsizing or closing psychiatric hospital long-stay beds, and increasing acute care beds, CMHTs and residential facilities. This period has also been characterized by insufficient funding, trans institution to the judicial system and destitution into the streets of severely mentally ill patients and, more recently in Quebec, further cuts in CMHTs, acute care beds, and residential facilities due to budgetary constraints. In Canada, cuts in the mental health budget have been proportionately greater than in the UK or Australia that were considered by a recent Canadian senatorial committee as re-investing in their mental health systems based on needs (2).

The number of places for each element in a given catchment-area was estimated by Wing in the '90s in a seminal work for the Royal College of Psychiatrists, and also by Wing, Thornicroft and Brewin (3). Combining a bottom-up evaluation of acute care beds, in-patient needs, and staff preferences for clients of residential facilities in the east end of Montreal, the following benchmarks were suggested: acute care beds (18 per 100,000 inhabitants); intensive home care (about 250 places per 100,000 inhabitants); 131 residential places, 20 nursing homes beds, and 20 long-stay beds per 100,000 inhabitants (4). The estimates did not take into account homeless mentally ill patients concentrated downtown Montreal, or prison inmates with psychosis (5). The latter study estimated that 8% of Quebec prison inmates had previously received a diagnosis of schizophrenia while the yearly treated prevalence in the population is 0.4% (6).

In each jurisdiction, the number of each type of acute care beds, residential facilities, or assertive community treatment teams will depend on historical and professional culture, and pressure on each type of service will depend on the availability of other types of services, not to mention outright closure of existing facilities. Signs of pressure are abundant (7): Canadian urban emergency rooms being on permanent overcapacity protocols (8); hospital psychiatric wards being at 100% capacity or more (while an average of 85% would ensure better quality (9); a long waiting list for supervised residential settings or assertive community treatment teams (10). The flow of patients in acute care wards is particularly sensitive to the small number of patients with longer lengths of stay. In one east-end Montreal acute care ward study, 37% of the patients admitted for over one month accounted for 87% of all bed-days and 13% admitted for over 3 months accounted for 56% all bed-days (4). At the time, the needs of these patients deemed ready for discharge was mainly for intensive home care and, to a lesser extent, for further supervised residential settings like group residential and supervised apartments with staff on the premises (4, 11). The 2005–2010 Quebec mental health action plan for the severely mentally ill adopted a recovery-oriented philosophy calling for the development of intensive home care, reduction of supervised residential facilities below our estimates of needs (11) and patient-led intervention plans with the introduction of peer-support workers. However, in 2013, less than a third of ACTeams had been developed (and only about 28 in Montreal, and 30% for ICM places); half of the 135 trained peer-support workers found contractual employment in public services in Quebec (8 million inhabitants); cuts in residential facilities have continued in regions considered overcapacity [Centre national d'excellence en santé mentale (CNESM), personal communication. https://cnesm.org/].

The scope of the present study was to further document the needs of long-stay in-patients in psychiatric acute care wards. In 2013, the Montreal Regional Health and Social Services Agency (ASSSM) conducted a survey of all acute care wards in Montreal for patients awaiting residential placement. This occurred in the context where the Ministry of Health and Social Services investigated the ASSSM for failure to meet acute care bed ratios, for excessive over-48-h emergency rooms stays by psychiatric patients, for insufficient downsizing of residential facilities, for insufficient mental health budget transfers to community organizations, for critical incidents with a threatening homeless severely mentally ill patient being killed by police. A standardized procedure and questionnaires were used by professional clinicians with ward staff, that allow comparisons for patient clinical and social characteristics, and preferences for housing and support on a population basis, that would be of interest in other resource-rich countries.

METHODS

Procedure

The project consisted of a cross-sectional survey that targeted two psychiatric hospitals with catchment-area acute care hospitalization responsibilities, nine general hospital psychiatric wards and one forensic mental health hospital all located in Montreal (total capacity at the time of the survey was 1,159 beds or 64 beds per 100,000 inhabitants). All patients with longer stay than one month, waiting for a place/bed in a community-based residential facility or likely to be referred to a residential facility upon discharge were considered eligible for the study. Patients in an acute stabilization phase, admitted for less than a month or in the provincial forensic psychiatric hospital were excluded.

For each patient, the hospital staff (mainly nursing staff) completed a questionnaire adapted from five existing instruments [Canadian Psychosocial Rehabilitation (PSR) Toolkit, Nottingham Acute Beds Utilisation Schedule (NABUS), Level of Care Survey (NYLOCS), Riverview Patient Inventory (RPI), Consumer Housing Preference Survey (CHPS)]. After completion, one or two staff members met two evaluators. Evaluators systematically reviewed the questionnaire answers with staff member(s) and asked questions on the patient's strengths, interests, rehabilitation readiness, and social network. For each patient, the final question explored staff member perception of ideal services. Housing orientation was also assessed independently by the evaluators on the basis of all available information. Data were collected by 15 experienced clinicians (evaluators) between March and April 2013, including AF and SG.

Of the 270 users who were evaluated for the project, 57 (21.1%) were excluded from the present study because they came from a forensic psychiatric hospital, and a further 19 (7.0%) were excluded because they had been hospitalized for less than 30 days. As a result, the final sample consisted of 194 subjects.

Instruments

A modified version of the RPI (12) was used to assess patients' clinical needs. The RPI is a behavioral rating scale that can be feasibly used by mental health staff to assess patients' clinical conditions over four different but interrelated dimensions: daily routines, psychological symptoms, social interaction, and aggressive behavior. The instrument was scale designed to assess problem behaviors that have an effect on treatment and community placement. It was developed to be a quick and convenient tool for nurses and other caregivers as a means of obtaining a comprehensive assessment. The RPI provides rapid assessment of a pertinent repertoire of behavioral difficulties and symptoms of psychiatric inpatients. Its administration requires little or no training. The scale appears to validly discriminate poorly functioning patients from higher functioning, less ill ones (12). To better estimate the level of clinical needs, the research team adopted the Trudel and Lesage version (13) that consists of 55 items and includes a fifth scale, labeled "Problems in Relation to Community Preparation". Each item is scored on a 5-point scale (from 1, no problem, to 5, severe problem). This version has already been translated and adopted in French and English (14). Cronbach's Alpha, computed from the select sample of 194 above-average-stay patients, was 0.94 for the total score and ranged from 0.86 (community preparation) to 0.75 (daily routine) for the subscales. Similar values were reported by Haley (12).

A modified version of the CHPS (15, 16) was used to assess staff and patient housing preferences. The original instrument consisted in 22 statements concerning the person's current living situation, housing preference, and support services required to live in the preferred housing. Most questions have a response choice. The modified version had integrated the taxonomy of housing preferences first used by the authors when they modified and used the NABUS (11).

The physical problems scale of the Levels of care survey (NYLOCS) was used, as we did previously in a study of the discharge of long-stay ward inpatients (17, 18). This questionnaire developed for long-stay psychiatric inpatients and nursing homes residents comprises a series of physical and behavioral scales. In this study, we only used the physical autonomy items (i.e. walking ability).

The Psychosocial Rehabilitation Toolkit (14, 19) was adopted to collect sociodemographic data (age, sex, native language, and marital status), as well as education level, work history, residential history, and financial, legal, and diagnostic information (diagnosis and comorbidities).

Housing preferences by patient and staff were recorded according to the CHPS; evaluators translated current administrative and detailed types of ASSSM residential resources, described by Felx and colleagues (20) into CHPS categories.

Data Analysis

Descriptive statistics were computed for a selection of variables covering socio-demographics, clinical evaluations, and suggested residential orientation. In order to compare evaluator and staff residential needs assessment with patient residential preferences, the CHPS and ASSSM scores were recoded using a common set of four categories:

- "own apartment": CHPS "own apartment", ASSSM "individual apartment".
- "apartment with support": CHPS "supervised apartment", ASSSM "apartment with other tenants" and "congregate apartments".
- group residence: CHPS "group residence", "foster home", "transitory residential resource", ASSSM "group resource", "forensic psychiatric group resource" and "dual diagnosis group resource"'.
- institution: CHPS "hospital unit", "nursing home", ASSSM "institution".

Residential assessment was cross tabulated with users' choice, and Cohen's Kappa index was computed to estimate the degree of agreement between evaluators and users and between staff and users. Furthermore, evaluators' assessments and users' residential preferences were combined and recoded into one binary variable, with 1 indicating agreement and 0 indicating disagreement, which made it possible to split the sample into two subgroups. Discrepancies between evaluators' assessments and patients' preferences were analyzed by comparing socio-demographic and clinical variables for two groups using chi square and Fischer's exact test for categorical variables and t test for continuous variables. Variables with statistically significant comparisons were adopted as explanatory variables of a logistic regression model with agreement/disagreement variables as targets. Pseudo R square indexes (21, 22) were computed to test model fit properties. All analyses were done using IBM SPSS® version 21.

RESULTS

Sample Characteristics

Tables 1 and **2** show the sociodemographic and clinical characteristics of the sample. Sample mean age was 46.4 (SD = 16.3) with a relevant number of young patients under 30 (20.1%) and older patients aged 65 or more (14.4%). Most of the patients were Caucasian (74.8%), lived alone (52.1%) or with relatives (26.8%) and had completed high school (69.6%). For most of them (73.7%) the primary source of income came from welfare and more than half (51.0%) were under legal constraint (public curatorship or a community treatment order).

More than two-thirds of the patients (71.6%) had been hospitalized in the last two years prior to the current hospitalization that; for 18.0% of the cases, lasted for more than one year. Psychotic disorders are the most common diagnoses (87.6%) in DSM-IV axis I, and co-morbidities with substance abuse (32.0%) and personality disorders (25.8%) were also common.

RPI assessment was performed for 172 patients (88.7%), results are displayed in **Table 3**. Mean RPI total score was 75.5 (95%CI:70.7–80.3), corresponding to a mild severity, lower than

TABLE 1 | Socio-demographic variables of 194 acute care ward in-patients earmarked for residential/institutional placement.

	N	%
Age		
Age between 18 and 29	39	20.1%
Age 65 or more	28	14.4%
Missing	8	4.1%
Sex		
Male	130	67.0%
Missing	0	0.0%
Ethnic origin		
Caucasian (European, North-American)	144	74.2%
Antilles (Haiti, Jamaica)	23	11,9%
Other	27	13,9%
Missing	0	0.0%
Civil status		
Single, living alone	101	52.1%
Single, living with relatives	52	26.8%
Separated or divorced	26	13.4%
Married or civil union	12	6.2%
Missing	3	1.5%
Education (highest completed)		
Elementary	43	22.2%
High school	96	49.5%
College or higher	39	20.1%
Missing	16	8.2%
Principal income source		
Welfare	143	73.7%
Old age pension	31	16.0%
Other	17	8.8%
No income	3	1.5%
Missing	0	0.0%
Legal status		
Under legal restraint	99	51.0%
Ordinance	63	32.5%
Under curatorship	56	28.9%
Under the Administrative Tribunal of Quebec	54	27.8%
Missing	0	0.0%

TABLE 2 | Clinical variables of acute care wards in-patients earmarked for residential/institutional placement.

	N	%
Previous hospitalizations in the last 2 years		
No previous hospitalizations	33	17.0%
At least one previous hospitalization	139	71.6%
Already in hospital for more than 2 years	16	8.2%
Missing	6	3.1%
Length of the current hospitalization		
≤ 3 months	68	35.1%
4 – 12 months	91	46.9%
More than 12 months	35	18.0%
Missing	0	0.0%
Diagnosis (Axis 1)		
Psychotic disorder	170	87.6%
Affective disorder	18	9.3%
Other	6	3.1%
Missing	0	0.0%
Dual diagnosis		
Personality disorder	50	25.8%
Missing	1	0.5%
Intellectual disability	19	9.8%
Missing	2	1.0%
Substance abuse	62	32.0%
Missing	1	0.5%
Walking ability		
Totally autonomous/without any problem	173	89.6%
Walks unsteadily or with a cane	11	5.7%
Walks with a walker or a wheelchair	7	3.6%
Missing	3	1.5%

TABLE 3 | Riverview Patient Inventory (RPI) Scores.

	Mean	SD
RPI Total score	75.5	34.1
RPI Daily routine	24.5	10.7
RPI Psychological symptoms	17.7	9.1
RPI Social interaction	10.1	6.0
RPI Aggressive behavior	7.4	6.2
RPI Community preparation	15.7	8.2

the tertiary psychiatric services very long-stay inpatient scores obtained by Petersen (14) (mean 101; 95%CI 98.2–105.4).

Residential Needs Evaluation

Residential needs evaluation and patients' preferences are displayed in **Table 4**. Patients' preferences couldn't be obtained for 19 subjects, and no missing data were found for evaluators and staff choice. Group resource was the most frequent residential solution proposed both by evaluators (52.0%) and by staff (67.4%) but not by patients who preferred a group resource only in 26.9% of cases. Patients' first preference was the apartment option (65.2%) that, in most cases, (46.9%) was their own apartment.

Agreement between evaluators' assessment and patients' preferences occurred in 30.6% of cases, corresponding to a total lack of agreement (Kappa = 0.05). An even lower agreement rate (25.1%, Kappa = 0.03) was found between staff evaluation and patient preferences. Discrepancies were also found between staff and evaluators (43.2% Kappa = 0.06).

The logistic regression model of discrepancies between evaluators and patients found a slightly statistically significant effect of having a personality disorder (B = -4.03; Wald = 14.65 OR =.02), the length of the current hospitalization longer than 12 months (B= -.81; Wald = 4.41; OR =.45) and interaction between personality disorder and total RPI score (B = 0.32; Wald = 11.00; OR = 1.03). However, even though the model was able to correctly predict 65.7% of cases, fit indexes were low (Cox and Snell R square =.13; Nagelkerke R square =.18).

DISCUSSION

All long-stay inpatients in acute care wards in Montreal awaiting residential resources at the time of the survey (at the end of 2013), were indeed assessed independently by clinical professionals as requiring such resources. It represents about 7% of existing psychiatric residential resources in Montreal. Absence of a regular flow of patients from these resources results in waiting times, in more costly hospital wards, sclerosis of social and living skills, and less hope in recovery. The characteristics of these middle-aged men with months of hospitalization, psychosis, judicial constraints, of which a third have substance abuse problems, and a quarter have personality

TABLE 4 | Patients and professional clinical evaluators or treating staff choice of residential/institutional services.

	Patient choice									
	Own		Apartment with support		Group		Institution		Total	
	N	%	N	%	N	%	N	%	N	%
Evaluator choice										
Own Apartment	13	7.4%	2	1.1%	4	2.3%	1	0.6%	20	11.4%
Apartment with on-site support	19	10.9%	8	4.6%	7	4.0%	3	1.7%	37	21.1%
Group resource	38	21.7%	16	9.1%	28	16.0%	9	5.1%	91	52.0%
Institution	12	6.9%	6	3.4%	8	4.6%	1	0.6%	27	15.4%
Total	82	46.9%	32	18.3%	47	26.9%	14	8.0%	175	100.0%
Staff choice										
Own Apartment	2	1.1%	1	0.6%	1	0.6%	0	0.0%	4	2.3%
Apartment with on-site support	8	4.6%	3	1.7%	3	1.7%	1	0.6%	15	8.6%
Group resource	60	34.3%	20	11.4%	32	18.3	6	3.4%	118	67.4%
Institution	12	6.9%	8	4.6%	11	6.3	7	4.0%	38	21.7%
Total	82	46.9%	32	18.3%	47	26.9%	14	8.0%	175	100.0%

disorders, would qualify them as candidates for Assertive Community Treatment (ACT) or ICM in suitable housing. Indeed, such an arrangement would be preferred by half the patients. The discrepancy between staff assessment of higher intensity residential facilities and patient preferences is consistent with national and international residential preference surveys of severely mentally ill patients (23). If severity of symptoms and behaviors may justify why staff differ in preferring more supervised residential facilities, the statistical models demonstrating such effect in this sample did explain only a small part of the discrepancy. Similar needs for own apartment and support by intensive home care was found 15 years ago in a comparable study of acute care wards in the east end of Montreal (11). The resulting benchmarks were used by the Ministry of Health and Social Services in its 2005–2010 action plan (24) and again in its 2015–2020 plan (25), this time reducing by half its residential facilities benchmarks. On the other hand, these inpatients found in acute care wards differ in their lower incapacity, measured with the RPI, from long-stay inpatients of psychiatric hospitals who were successfully and mostly transferred to regional tertiary residential facilities or other supervised residential facilities (not their own apartments) in British Columbia in the last decade (14), or in Montreal two decades ago (18, 26) or those assessed in nursing homes in a Quebec region with no psychiatric hospital (13). Overall, the convergence of evidence from these studies and comparison with the level of incapacity of our patient sample, points to the patient's choice being the most accurate assessment of residential services needs.

There are limitations associated with the design of this study in representing the need for residential resources. First, only inpatients earmarked for residential facilities were selected by staff. Secondly, our study did not allow us to compare short-stay patients versus long-stay. It could be hypothesized that long-stay patients receive less rehabilitation interventions addressing social functioning compared to their needs, and that factor could explain why they have longer stay in the hospital ward. Thirdly, the NABUS questionnaire was modified by the Agency from the original Montreal (4) study so as not to independently cover the need for intensive home care. Staff may have considered this option more often, even though it was not readily available in Montreal at the time of the study. Fourthly, patients' perspective was not collected independently, which may have increased their rating of their own apartment. Fifthly, the absence of patient representatives or peer-support workers in the assessment team is a finding about the program evaluation reported by this study. It was a patient-centered but not a patient-led approach. Finally, a more complete needs assessment would also consider the homeless as well as severely mentally ill prison inmates.

The findings support the final report by a Ministry of Health and Social Services inspector for Montreal (26) which recommend giving priority to the development of intensive home care, both ACT and Intensive Case Management, up to 1,627 ACTeam places (about 100 per 100,000 inhabitants) and 6,000 ICM places (about 320 per 100,000 inhabitants), more collaboration with existing residential resources, and a 25% increase of existing residential resources. It also recognizes the need for nursing homes and the increased specialization of existing residential resources. The report remains silent on the Supplement to Rent (STR), which is surprising since, in a simulation of the number of places and people in need of specialist care in a balanced mental health care system for people with severe mental illness (SMI) (27), we demonstrated that the combination of ACT or ICM with STR would cost \$9,000–\$14,000 per person per year, while group resources now average \$49,000 and supervised apartments with continuous day staff presence cost \$19,000. The feasibility and value of the combination of ACT or ICM with STR for the most severely mentally ill in the community, namely homeless severely mentally ill patients, was demonstrated in the At Home project in five Canadian cities, including Montreal, that recruited homeless severely mentally ill patients through peer-support workers with lived experience of homelessness, and successfully offered these homeless patients access to own apartment with STR, and clinical support by an ACT-Team or ICM-Team (28, 29). A recent international consensus conference on transitions to community of services for the severely mentally ill warned to complete the deployment of flexible assertive community teams before decreasing further hospital and residential facilities beds (30).

Will priority be given to the development of such an approach which would fit the preference of in-patients awaiting resources, and to those currently in such resources who now consider this to be their choice (23, 28). It could be argued that the co-morbidity of psychosis with personality disorder may influence the choice of such patients; however, Côté and colleagues (31) showed that psychotic patients with personality disorder have higher social autonomy to which they could legitimately aspire, but not always recognized by staff. This may not translate to progressively closing existing residential facilities but adapting them to welcome more severely mentally ill patients, patients with judicial constraints or physical frailty, and specialized homes for Natives or youth with psychosis. A balanced mental health care system will always require an array of residential resources, some very highly staffed and with proper programming that represent alternatives to long-stay hospitals or former psychiatric hospitals such as the tertiary psychiatric residential facilities developed in British Columbia (32). The array of residential services will also include foster families, group homes, and congregated housing and apartments (28). Such facilities have been described and are reputed as less recovery-oriented, yet evidence shows that they represent the best choice for patients at a point in time in their recovery process (23, 33). Recovery-orientation is not linked to the type of residential facilities per se, but to programming, competence of staff and full participation of residents and their families (32, 34).

CONCLUSION

Over half of the long-stay acute care wards in-patients in Montreal would prefer their own apartment with intensive home care. This would prove less costly than the group homes earmarked for most of them by ward and residential program professionals who evaluated their needs. Our findings also suggest that such evaluation of needs, treatment and rehabilitation shall involve peer-support workers like in the UK, alongside professional staff (35), to ensure a more efficient, patient-led and recovery-oriented system of mental health care for the severely and persistently mentally ill.

Ethics

Given that this is secondary analysis of data from program evaluation, ethical evaluation was performed by the Mental Health Agency Directorate that commissioned the survey. The Mental Health Agency is regional governmental agency designed to manage and evaluate mental health services. Additional ethical evaluation was performed by the Head of professional services at the IUSMM responsible for the safe and confidential keeping of the data. Moreover, all the data obtained for the analysis was anonymous. Thus, given the aforementioned design of the study and the anonymity of the data collection, the Ethics Committee was only informed of the study, and gave formal approval in 2019. All the participants (or a legal representative) filled in an Informed Consent during the stay in the acute ward.

DATA AVAILABILITY STATEMENT

The datasets generated for this study are available on request to the corresponding author.

ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

FR contributed to the study design and data analysis. AF contributed to the study design and management of data gathering. SG, LD, ALu, and MB contributed to the data gathering. MC supervised data analysis and reviewed the manuscript. ALe contributed to the study design, coordinated the research team, and reviewed the manuscript.

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Using Group Concept Mapping to Develop a Conceptual Model of Housing and Community-Based Residential Settings for Adults With Severe Mental Illness

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Background: Most existing conceptual models of residential environments and housing programs were developed over a decade ago or lack comprehensiveness. The attributes to be used to describe housing programs with adequate specification remain unclear including the attributes that mediate service user outcomes. In this study, group concept mapping was used to develop a conceptual model of housing and community-based residential settings for adults with severe mental illness based on stakeholder perceptions and values.

Methods: Participants were selected through purposive sampling and included service users, family members, staff working in residential facilities, mental health workers and managers. Participants (n=221) generated 1,382 statements describing attributes of housing and community-based residential settings for adults with severe mental illness (99% saturation). Thematic content analysis was conducted to analyze the statements and create a list of 140 selected statements. Participants then rated (n=416) and sorted into categories (n=73) the selected statements. Descriptive statistics were computed for each statement relative importance. Multidimensional scaling and hierarchical cluster analysis were used to produce the conceptual model (maps). Stakeholders (n=12) were also involved in the interpretation of the maps.

Results: The findings show overall concordance between stakeholders in relation to statements perceived importance (rating) and the statements inter-relationships (sorting). The stress value of 0.23 indicates that the two-dimensional solution of the multidimensional scaling analysis fits the data set (goodness of fit). The final conceptualization includes 12 clusters: (1) A balanced and healthy housing system; (2) Quality and management practices (facility/local level); (3) Physical external environment;

(4) Services tailored to needs and preferences; (5) Services and interventions provided (linkage); (6) Equality, policies and availability of activities; (7) Organizational structure and staff qualities; (8) Services and interventions (learning skills); (9) Services and interventions (daily living support); (10) Personal space and right to privacy; (11) Physical interior environment; (12) Respect, functioning and atmosphere.

Conclusion: The results illustrate the multifaceted and multilevel nature of community-based residential settings through a visual representation. They articulate a number of attributes, clusters and dimensions that could be included in a common conceptual model of community-based residential settings and housing for adults with severe mental illness.

Keywords: housing, community-based residential settings, supported/supportive housing, concept mapping, mental health services, conceptualization, mixed-method approach

INTRODUCTION

Community-based residential settings are widely implemented in Australia, Europe, and North America and constitute a costly key component of a modern mental health service system for adults with severe mental illness (1–3). Decades of research in the field have left clinicians, managers, and policy makers wondering what works best for specific group of service users, and why. Methodological weaknesses of relevant studies may partially account for the lack of guidelines and evidences, but the foremost and well-documented problem is variation: variation in terminology (1, 4, 5), variation in inputs and processes even within setting types (6, 7), variation in desired outcomes or functions, and variation in operationalization of housing models (8–10). Indeed, there is still ambiguity surrounding the description of these settings (1, 4, 11–13) using systematic attributes or features which are of importance to service user experiences and outcomes. Underlying the problem may be the fact that the field lacks an accepted framework for conceptualizing housing and community-based residential settings for adults with severe mental illness and for unifying decades of evolution in the field.

Housing and residential service models have evolved fueled by deinstitutionalization, by the move toward community integration and by recovery-oriented practice. Numerous studies since 1970 have highlighted potential key attributes of housing and community-based residential settings for adults with severe mental illness. Indeed, these settings have been described in terms of structural characteristics, process of care or both [e.g., Rog and Randolp multisite evaluation (6), *PROGRES* (14–16)*, UTOPIA-study* (17), *QuEST programme* (18)]. Studies comparing the outcomes of adults with severe mental illness living in different types of settings have mostly yield mixed results (1, 11–13, 19, 20) and have assessed various outcomes. Some noteworthy findings are that housing generally reduces days of homelessness and hospitalization and a trend for an inverse relationship between restrictiveness of setting and outcomes. A recent study conducted in England found a positive association between successfully moving on from mental health supported accommodation and two specific aspects of service quality: promotion of human rights and recovery-based practice. It also measured a lower quality of life in service users living in independent apartments with peripatetic support [see *QuEST programme* (21)]. Recent taxonomies can now be used to classify supported accommodation models, but they are, by definition, reductive and do not provide a detailed description of housing and community-based residential settings elements of care (4, 5, 22). Nor can they capture variation within service models. The tools used are also a great source of information on potential attributes and dimensions [e.g., *QuIRC-SA* (23), *COPES* (24)] but vary between studies. Unable to identify a comprehensive and systematic set of attributes to describe these settings from existing studies, we turned to models and frameworks to reach a better and in-depth understanding of community-based residential settings. In this vein, several models have been developed [e.g., (6, 7, 25–30)].

To our knowledge, only three models have provided a relatively comprehensive representation of the physical and socio-cultural attributes of housing environments and programs which could be critical to service user outcomes: (1) *The Ecological Framework for the Study of Community Housing for the Chronically Mentally Disabled* (26, 31); (2) *A Model of the relationship between program and personal factors and patient outcomes* (27); and (3) Kloos and Shah's (29) *Framework to study the ecology of housing environments* of persons with severe mental illness. All emphasize the complex and multifaceted nature of community-based residential settings. They go beyond the individual level to sharpen our understanding of this complex intervention as recommended by Tansella and Thornicroft (32). Each of the three models distinguishes two to four levels of attributes among: a person (level 1) with specific characteristics whom lives in a setting (level 2) located within a neighborhood and a community (level 3) and a region (level 4). Each model also uses domains that may influence service users to describe community-based residential settings and housing among: (1) the physical environment; (2) the social environment or system; (3) interpersonal relationships; (4) planning and policy (5) service delivery or support environment.

All of these three models are inspired by Moos's seminal work on treatment and human environments, which derived from several environments such as correctional facilities, families, and university residence halls (27, 33, 34). Moos's work as well as several researches in the 1960s, 1970s, and 1980s conceptualized inpatient and community-based residential settings for adults with mental illness based on social ecology and environmental psychology frameworks (25–27, 33–36). These studies provided us with a better understanding of the nature of service users' interrelations with their physical and socio-cultural environments (37), all components relevant to our understanding of residential environments. However, after revisiting those models and studies, two questions remained:

- Will the models and findings still apply decades later?
- Among the selected attributes, domains, and levels of the three models, which should be used to characterize the existing array of community-based residential settings for adults with severe mental illness?

Facing the challenge of evaluating community-based residential settings for adults with severe mental illness (e.g., schizophrenia) in Quebec, Canada, we recognized the need for deconstructing fully this complex component of the mental health service system into common attributes and dimensions. We consider the following principles to lead to a comprehensive conceptualization: (1) to use an inclusive approach therefore considering all potential attributes notwithstanding specific housing functions nor desired outcomes; (2) to use a bottom-up methodology therefore building on the knowledge of all relevant stakeholders; (3) to consider the large array of existing housing and community-based residential settings for adults with mental illness in Quebec.

This paper reports on the first phase of a research programme conducted in Quebec, Canada (38). Phase I was undertaken to articulate the multifaceted nature of housing and community-based residential settings as perceived by various stakeholders and then to develop a conceptual model. The results of Phase I shall be of interest to researchers for the validation/development of existing conceptual models and for the operationalization of housing and community-based residential settings, but also to the clinicians, patients, families and managers of residential facilities. Phase II aimed to develop a tool to describe housing ranging from 24-h staffed congregate setting to independent tenancy with peripatetic support and will be presented in a forthcoming publication.

MATERIALS AND METHODS

Design

For the purpose of developing a conceptual model of housing and community-based residential settings we used a form of mapping approach: group concept mapping (GCM). GCM has evolved since its inception in the 1980s (39–41). It is a structured mixed-method participatory approach that incorporates group processes and multivariate statistical analyses (multidimensional scaling and hierarchical cluster analysis). It was well-suited because of the complex nature of community-based residential settings and the need to enable multiple stakeholders with different interests and expertise to articulate their thinking on the topic. GCM enables us to represent those ideas visually in a series of interrelated maps. GCM involves six major steps: (1) preparation; (2) generation of statements; (3) structuring of statements (rating and sorting); (4) data analysis and representation of statements; (5) interpretation of results; and (6) utilization of results and maps (39, 42). Steps 2, 3, and 5 involved participants.

Setting

Generation of statements (step 2) involved four regions across the province of Quebec in Canada. Participants in the structuring of statements (step 3) came from five different regions. Sites were selected based on the available range of housing and community-based residential settings as well as catchment area (range in size and geographical spread) and location (urban, suburban, rural). The first four regions covered over 50% of public community-based residential facilities and 45% of the province population.

Participants

All participants were selected through purposive sampling to maximize heterogeneity and to ensure that all major perspectives were represented (not in proportion to what exists in the population of participants). These included stakeholders with a variety of lived experiences representing the range of available housing models in Quebec. Participants were regrouped in four stakeholder groups: (1) service users; (2) family members; (3) managers, administrators of residential facilities or associations, and professionals supervising community-based residential settings; (4) staff working in various residential facilities or community associations and mental health workers. The four stakeholder groups were only mixed during the interpretation of the results (step 5). The inclusion criteria required participants to understand French and to be 18 years of age or older. Those who lacked capacity to provide an informed consent were not eligible. The research project was approved by seven ethics review boards, and all participants provided written informed consent.

The concept mapping process ultimately involved 722 incidents of participation as follows: 221 in generating statements (step 2); 416 in rating statements and 73 in sorting statements (step 3); and 12 in interpreting results (step 5). There were some overlaps between the participants involved in the different steps as they were systematically invited to take part in the following tasks of the GCM process. Most of the individuals who generated the statements through brainstorming also rated and sorted the statements. Therefore, the total number of unique participants is estimated to be 500.

Table 1 shows the sociodemographic characteristics of the participants involved in the six steps of the concept mapping process. Sociodemographic characteristics were not systematically collected during the generation of statements (step 2). Complementary information indicates that the participants involved in step 2 were mostly female (136/221, 62%) and French-Canadian (210/221, 95%). They came from the public sector (172/221, 78%) as well as the private and non-profit/volunteer sectors (49/221, 22%).

TABLE 1 | Participants in the group concept mapping process (number and sociodemographic characteristics).

Stakeholder groups and subgroups	**No. of participants (per GCM steps)**				**Sociodemographic characteristics**		
	Generation (Step 2)	**Rating (Step 3a)**	**Sorting (Step 3b)**	**Validation (Step 5)**	**Age** [a]	**Male (%)**	**Years (SD)** [b]
Set 1 – Service users and family members							
U. Services users living in various settings (n (%))	**49 (22.17)**	**172 (41.35)**	**7 (9.59)**	**1 (0.08)**	**46-50**	**50.5**	**15.68 (12.26)**
Independent living, supervised apartment		39	5	1			
Foster home		30	1	–			
Group residence, room and board, hostel		96	1	–			
Other (e.g., family)		7	–	–			
F. Family members	**43 (19.46)**	**11 (2.64)**	**1 (0.01)**	**1 (0.08)**	**61-65**	**9.1**	**20.72 (13.50)**
Set 2 – Services providers and others							
M. Professionals & managers (n (%))	**46 (20.81)**	**79 (18.99)**	**27 (36.99)**	**6 (50.00)**	**46-50**	**32.5**	**18.44 (11.34)**
Managers and administrators		34	12	2			
Professionals overlooking facilities		37	12	2			
Others (e.g., academic, agencies, NPO)		8	3	2			
S. Staff including mental health workers (n (%))	**83 (37.56)**	**96 (23.07)**	**25 (34.25)**	**3 (25.00)**	**46-50**	**29.2**	**12.93 (9.34)**
Foster home (operators)		24	8	1			
Group residence, supervised apartment, room and board, hostel (employees or unit managers)		72	10	2			
Others		–	7	–			
Mental health workers (n (%))		**58 (13.94)**	**13 (17.80)**	**1 (0.08)**	**41-45**	**31.58**	**15.80 (11.52)**
Case managers or mental health practitioners		54	11	1			
Peer support workers		4	2	–			
TOTAL	**221**	**416**	**73**	**12**			

[a] *Median (ordinal scale).*

[b] *Years = number of years working in mental health field or using services.*

U, Service users; F, Family members; M, Managers, administrators and professionals supervising residential settings; S, Staff working in residential facilities and mental health workers.

Recruitment Process

The principal researcher (AF) first met with the management team coordinating access to public community-based residential settings in each region to present the research project and better understand the local housing estate and mental health services. They provided a list of all foster home caregivers and residential facility managers as well as a list of non-profit community-based residential facilities and housing, and whenever possible, private facilities. Potential participants received a letter explaining the purpose of the study and inviting their participation. At the commencement of the GCM process the principal researcher (AF) and a research assistant presented the project to managers, mental health workers, caregivers, and facility managers at each site. Follow-up meetings took place at each site to share information on the project progress. Selected participants were either volunteers, designed by the management team, identified by other participants or by the research team. Most service users were first identified by their case manager or mental health worker. Family members were mostly recruited *via* associations. We contacted each potential participant by telephone.

Group Concept Mapping: The Six Steps in More Details

Step 1 Preparation

During the preparation step, the project was planned, and its logistics were determined. Participants were engaged and selected by the research team. The research team was multidisciplinary and included one person living in a residential facility and another with experience as a foster home operator. The research team decided not to use a web-based implementation because of the limited Internet access of many potential participants and their various literacy levels. Therefore, statements were generated (step 2) and rated (step 3) and results interpreted (step 5) during face-to-face group sessions. The sorting activity (step 3) was done manually by each participant *via* mail.

Step 2 Generation of Statements

Statements were generated during 13 live brainstorming sessions. Group sessions included from 4 to 28 participants. At the commencement of each session the principal researcher (AF) gave a description of the study and explained the brainstorming task. The general rules of brainstorming applied and no criticism of statements was allowed (43). Through one single prompt question, participants were asked to describe the attributes that community-based residential facilities and housing for adults with mental illness have or should have. Participants were given approximately 5 min to ponder. The facilitator then asked each participant for an idea/statement (or to pass his turn). After two or three rounds, hitch-hiking was used. Statements were fed directly into a computer and projected on a screen during sessions by the principal researcher (AF). Participants could visualize and validate the statements as they evolved. All statements were entered into a software package (ATLASti⁄4.1).

Because of the large number of statements generated, thematic content analysis was used to reduce and analyze statements. A coding frame was developed by one member of the research team

(AF) with supervision from two other researchers (AL and MC). The analysis was first conducted concurrently with group sessions to ensure that saturation was reached (99%). Then, an in-depth analysis was conducted. New codes and themes were added in the course of the analysis. Very good inter-rater agreement (91%) was achieved by two independent raters who coded 250 randomly selected transcripts. Intra-rater agreement was 99% after two months. Statements coded as residue were reviewed at the end of the analysis. The final list of statements to be used in the following steps of the GCM process comprised 140 selected unique statements (consisting mainly of quotes representative of relevant codes). Only codes related to structural and process elements were considered relevant in relation to our research questions. Before editing, statements were reviewed for singularity (reference to only one topic) and neutrality. Statements were left unchanged, whenever possible, to preserve as much as the content and wording in the original voice of the participants. The research team decided to keep a higher number of statements than usually found in GCM project to represent as accurately as possible the conceptual universe [generally a set of 80 to 100 statements can be reasonably processed in subsequent steps (39, 44)].

Step 3 Structuring of Statements

Information on the value and the relationships among the final set of statements was obtained. Because of the time required to conduct the tasks, rating and sorting were carried out separately. First, the rating of statements occurred during 41 group sessions (average duration of 2 h). At the commencement of each session, the principal researcher (AF) gave a short description of the study purpose and of its progress. Then, participants rated each of the 140 statement on two five-level ordinal scales: relative importance (1 = not important at all; 5 = very important) and current presence in the array of available housing (1 = not present; 5 = always present). Each statement was read by the facilitator and simultaneously projected on a screen. Statement numbers were listed in questionnaire form for participants to write down their answers. This procedure was chosen to ensure uniformity and because of discrepancies in participant literacy levels. The second task consisted of an unstructured card-sorting procedure (45). Each participant received one envelope containing instructions, 125 of the 140 statements printed on cards 3x8 inches, 20 blank cards and elastics. The 125 statements were randomly selected in an endeavor to reduce the burden associated with the sorting task. Participants were instructed to individually sort the statements into mutually exclusive piles in any way that made sense to them. They were instructed not to regroup all items in a single pile, not to have 125 piles (one pile per statement) and not to have a pile of miscellaneous statements. Participants also labeled each of the piles they created. Some participants reported taking over 5 h to complete the sorting task, which was described as very challenging despite the availability of unlimited telephone support and the effort made by the research team to reduce the number of statements (above the recommended number for GCM).

Step 4 Data Analysis and Representation of Statements

The investigators next computed the results from step 3 and selected those to be presented to participants for interpretation and discussion (step 5). Sorting and rating data were entered in The Concept System© software (http://www.conceptsystems.com/content/view/the-concept-system.html) (46).

Ratings were also entered in a common database in the PASW Statistics 18 software (47). Descriptive statistics were computed. In order to compare stakeholders, two sets of stakeholders were created: S1 = service users (U) and family members (F) and S2 = staff and mental health workers (S) and professionals, managers and administrators (M). Mean difference for each statement perceived importance was computed using nonparametric tests (U de Mann-Withney) with Bonferronni correction ($p = 0.0000$). Results exclude participants with over 5% of missing data (> 5%). The rare random missing values were replaced by the attribute mean rating for the stakeholder subgroup (e.g., foster home caregivers).

In GCM, sorting results serve as an input to multidimensional scaling (MDS) and to the creation of maps. Each sort was transformed into an individual binary co-occurrence matrix, the number of which equals the number of completed sorts ($n = 73$) (X_{ij}). For a single participant and for any two statements, the number placed in a matrix was 0 if the two statements (i and j) were not sorted together and was 1 if they were. Individual matrices were summed up across all participants to create a total 125 × 125 symmetric similarity matrix that indicated the number of participants that sorted two statements together (T_{ij}) (39). This serves as a measure of the perceived conceptual closeness or distance between statements. Because the presence of both generic and smaller groupings (sorts) can create problems in the representation (48), one sort composed of only two clusters was excluded from the final analyses. Therefore, the analyses included the sorts of 72 participants (out of 73).

The total similarity matrix T_{ij} was used as input for nonmetric MDS. The output is a geometric configuration of points (point map). The point map displayed the location of all brainstormed statements. The number of dimensions was limited to two (X_1, X_2) because two-dimensional configuration are generally easier to comprehend and in accordance with GCM guidelines (39, 44, 49, 50). The statements closer to each other on the map are expected to be more similar in meaning. Their proximity (distance) results from the fact that MDS placed them near each other because many participants sorted them together in piles. To gain a better understanding of the location of statements and determine the relative cohesiveness of the various parts of the map, especially the central area, bridging index were computed for each statement (0 to 1 scale) (39). An index closer to 1 indicates the statement more dispersed relationship to statements elsewhere on the map. As every statement must be placed on the map, the algorithm locates it in an intermediate position. An index closer to 0 indicates that a statement was placed by many participants with statements immediately adjacent to it on the map. Finally, Kruskal' stress value was computed to measure the degree to which the distances on the map are discrepant from the value in the input total similarity matrix (Tij). A high stress value implies that there is a greater discrepancy between the input matrix data and the representation of those data on the two-dimensional configuration. GCM projects are expected to have a stress value between 0.205 and 0.365 (M = 0.285) (39).

For each statement, the coordinate values (Xi1, Xi2) produced by the MDS analysis served as the input for an ascendant hierarchical cluster analysis using Ward's algorithm (51). Analysis partitioned the statements (dots) into a number of non-overlapping clusters (cluster map). The research team explored the suitability of several solutions (range of 5 to 18 clusters) based on practicality and interpretability. In GCM, there is no automatically mathematical criterion by which to select the final number of clusters. Starting with the 18-cluster solution we focused on the two clusters being merged to a point where the research team identified a lost in information. Cluster maps were also created for the four stakeholder groups to explore for agreements and disconnects.

Step 5 Interpretation of the Results

At this step, the representation of statements was presented to participants in accordance with the participatory nature of the process. All participants had been involved in one or more steps of the CGM process. The facilitator (AF) started the session with a brief reminder of the brainstorming, rating and sorting tasks performed previously. The computer-generated cluster map for all stakeholders (an aggregate of all the participants' individual representations) was presented cluster-by-cluster along with the 11 and the 13-cluster solutions. During the group session, the 12 participants were asked to comment on the number and on the content of clusters. They were also asked to place 15 additional statements on the map (125 sorted statements + 15 = 140 statements in all) to test the emergent commonly defined conceptualization. Clusters were labeled with their inputs during the group discussion.

Step 6 Utilization of Results and Maps

Concept mapping results (statements, attributes, clusters) were used to refine the conceptual model built on stakeholder perceptions and values. Indeed, the cluster and point maps were analyzed further in terms of dots and cluster location to create dimensions (axes). Principal components analyses (PCA) were conducted using current presence ratings to refine the model fit to the wide range of existing housing options in Quebec. A first draft of a tool describing the structural and process components of community-based residential settings for adults with mental illness was also developed based on the results. This tool was field-tested in various residential settings (38). The development of the instrument was part of the second phase (Phase II) of a research program and will be presented in a forthcoming manuscript.

RESULTS

Attributes of Community-Based Residential Settings and Housing (Step 2)

The brainstorming sessions generated 1,382 statements (average = 106 per session; range = 86–148) describing the attributes of residential facilities and housing for adults with mental illness. These were grouped under the 236 codes, 50 sub-themes/codes and 9 themes of **Table 2**. The Table also indicates the number of sessions that a statement related to a sub-theme/code was mentioned and the stakeholder group to mention it. A larger dot indicates a higher occurrence of statements for a stakeholder group. No dot indicates no statement emerged.

Results reveal convergence among stakeholders; out of the 50 sub-themes/codes only six (12%) were not mentioned by all four stakeholder groups and most (37/50, 74%) were mentioned in at least 10 of the 13 brainstorming sessions. Some were mentioned predominantly by specific stakeholder. Statements regarding quality of care and management were more frequent among managers. Families brought up their participation as partner and their need for support. Staff advocated for local partnerships, support and ongoing training. For service users, sub-themes regarding social and physical environments, rules and functioning, and clinical/rehabilitation activities were prevalent. No service user statement fell under three out of the five sub-themes of *local partnerships* and under one out of the three sub-themes of *facing stigma*. Service users emphasized sub-themes closer to daily life: interactions, support, making choices, not being imposed upon, and participation in own life and in life inside and outside the setting. Occupations also emerged as a central sub-theme (*occupations, group activities, physical activities, employment, ADL*). Recurring sub-themes among service users also included the involvement of *family members* as well as *individual outcomes* which serves as an indication of what is expected from this complex intervention by stakeholders. Codes related to this sub-theme/code were nevertheless considered irrelevant based on our research questions and were removed in the process of creating the final list of 140 statements. *Conflicting values/incoherence* is another example of a sub-theme that was excluded.

Statements Relative Importance

The relative importance of the selected 140 statements ranged from 2.71 (1.15) to 4.79 (0.45) (n = 416); most distributions were negatively skewed. Two-thirds of the 140 statements (93/140, 66%) had a perceived importance of 4 or higher (4 = important). Three statements (2.14%) were rated below 3 (3 = more or less important). Only a few statements (15/140, 11%) were significantly rated differently by the two sets of participants. However, only 62/172 (36%) of the service users managed to rate all statements during the 2- to 2.5-h group session. Of these, 25 (40%) were living independently. Consequently, completion was significantly linked to living arrangement ($\chi 2 = 39.68$, df = 3, $\rho = 0.000$).

TABLE 2 | Attributes of community-based residential settings and housing for adults with severe mental illness generated by stakeholders (n=221) (step 2).

Themes	Sub-themes/codes	Codes or codes' descriptors	No.	Stakeholders			
				U	**F**	**S**	**M**
Quality of care and management	Philosophy of care and approaches	Share a common vision (recovery); inter-ministerial vision/policies; strengths model; push for supported housing; normalization	8	•		•	●
		User-centred approach (individualized)	11	•	•	•	•
	Conflicting values/ incoherence	Contradiction between approaches geared to recovery/citizenship and existing rules/regulations serving risk management.	9		•	•	●
	Evaluation and monitoring of residential facilities	Users' and families' satisfaction with services; service user and family participation; ongoing monitoring of quality; discrepancy between facilities; quality of unlicensed residential resources (lack of)	11	•	•	•	●
	Staff competencies	Qualifications; expertise/skills	11	•	•	•	•
	Ongoing staff training	Offer training to CRF staff (e.g., mental health)	8	•	•	●	●
	Diet	Serve balanced, quality food	11	●	•	●	•
	Burden on staff/families	Workload for families and staff/operators; ensure operators have days off (e.g., foster homes)	8	•	●	●	•
Facing stigma	Promotion	Communicate with and support landlords; public education; awareness	5		•	•	●
	Information about different CRF	Information for families, service users, staff and public; create websites with information on CRF	6	•	•	•	•
	Experience of stigma among service users, families, CRF and staff	Self-stigma; prejudice and discrimination from staff, communities and other service users against mental illness	8	•	•	•	•
		NIMBY; prejudice against caregivers and families	4			•	●
Local partnerships	CRF staff	Involvement in setting goals and designing treatment plan; working jointly with mental health teams; lack of recognition	6		•	●	•
	Family members	Involvement in setting goals and designing treatment plan; access to information; lack of recognition	10	●	●	•	•
	Service users	Involvement in setting goals and designing treatment plan	5		•	•	•
	Community	Collaboration with community and local organizations (e.g., police force, supportiveness), access to resources	10	•	•	•	●
	Health services/network	Collaboration among stakeholders (CRF, family, service user, mental health team, community); continuity of care; access to emergency services	11		•	●	●
Access to a variety of housing	Admission process	No waiting list; simple process; well-defined and non-restrictive admission criteria; importance of meeting service user	11	•	•	●	●
	Evaluation	Evaluate service user's needs and abilities; consider service user's preferences/choices; ensure person-environment fit	13	•	•	•	•
	Types/range	Array; housing for specific sub-groups (e.g., youth, seniors, mothers, multicultural); crisis; respite; dynamic housing models (adapt to changing values and priorities)	13	•	•	•	•
		Specialized CRF for complex needs (e.g., forensic, substance abuse)	11	•	•	•	●
	Access to propriety and independent living	Offer affordable/adequate housing (lack of); support access to tenancy; offer rent supplements	10	•	•	•	●
	Length of stay	Length of stay; *move on* versus *home for life*	11	●	•	•	•
Outcomes	Individual outcomes	Somewhere to live; feeling “at home”; being “at home”; security; community integration; isolation (independent living)	13	•	•	•	•
		A good life/quality of life; wellness	9	●	•	•	•
Support to stakeholders	Operators/CRF staff	Informational (e.g., feedback, information, mentoring); tangible (e.g., regular supervision/visits, financial resources, night and weekend support, objectives/plan, training, volunteers); emotional (e.g., peer support); esteem (e.g., encouragement)	11	•	•	●	•
	Family members	Offer respite resources; offer sufficient services (lack of); peer/group support; training and education	10	•	●	•	•
Physical environment	Neighbourhood characteristics	Variety of locations (e.g., rural, urban); safety (e.g., crime, prostitution); density of CRF (normalization)	12	•	•	•	•
	Proximity to community resources	Usual services (grocery store, coffee shop, bank) and other services (e.g., hospital, community centre); transportation; parks	11	●	•	•	•
	Quality	Quality (e.g., plants, decoration); tidiness; home adaptations	12	•	•	•	•
	Equipment/material	Access to appliances (e.g., TV, computer, refrigerator); telephone	9	●	•	•	•
	Design	Smoking room; common areas; backyard; spaciousness; room(s) for staff; room for visitors	11	●	•	•	•
	Privacy	Private bathroom; private room; choice of sharing a room; keys (bedroom and home); unit access; quiet	12	●	•	•	•
Social environment	Residents' personal factors	Number of residents; heterogeneity; characteristics (e.g., skills, age, gender, motivation, dreams, functioning, symptoms, income)	13	•	•	•	•
	Staff	Staffing level; cover; turnover; categories (e.g., user-providers, professionals, paraprofessionals, back-up); qualities (e.g., believe in the person, flexibility, good listener, kindness, observe)	13	●	•	•	•
	Pets	Benefits of pets; pet permitted (or not)	6	•	•	•	•

(Continued)

TABLE 2 | Continued

Themes	Sub-themes/codes	Codes or codes' descriptors	No.	Stakeholders			
				U	F	S	M
	Atmosphere	Family-like; group living; respect; pleasant atmosphere (e.g., welcoming, warm, joyful) vs. no/bad atmosphere	12	•	•	•	•
	Interactions among residents	Mutual help; friendship; lonely/solitary; respect; discussions; capacity to adapt to new/different residents; conflicts	10	●	•	•	•
	Resident-staff interactions	Trust (bidirectional); appropriate language; respectful; distance; egalitarianism; attachment; listen/understand; adapt to the person; availability	13	●	•	●	•
Rules and functioning (management practices)	Residents' participation	To be allowed to: do tasks (e.g., cooking); decorate bedroom and common areas; make suggestions (e.g., menu, rules); residents' meetings (committee)	12	●	•	•	•
	Restrictive practices and level of choices	Leave freedom; do not impose; do not tell what to do; rigidity To be allowed: to take drugs/alcohol; to receive visitors; to have a sex life; to make choices; to lock bedroom; to lock bathroom; to access kitchen or refrigerator	13	●	•	•	•
	Rules and regulations	Importance/existence of rules (e.g., schedule, curfew); flexibility of rules; clearly articulated; application of *Quebec Civil Code* only (no other explicit rules)	13	•	•	•	•
Support to service users	General help and support	Multiple sources (e.g., peer support, social network, services external to CRF or peripatetic); offer appropriate services; active support; support goals and treatment/recovery plan	13	●	•	•	●
	Spirituality	Respect and encourage spirituality and values	5	●		•	•
Person	Emotions	Moral and emotional support; understand/talk about problems	12	●	•	•	•
	Personal growth	Develop potential; support recovery; build a life for oneself	12	•	•	•	•
	Variety of forms (array and intensity)	Do with person; do for person; have the person do on his/her own; develop potential, skills training, motivate, reinforcement, stimulate, provide feedback, encourage, teach, supervise, accompany, etc.	13	•	•	●	•
Clinical and rehabilitation activities	Domestic activities and activities of daily living (ADL)	Medication, personal hygiene, dressing, healthy lifestyle; diet; mental and/or physical health; budget; purchases; cigarette management; medical appointments; transportation	13	•	•	•	•
		Meal preparation; laundry; housework; groceries	12	●	•	•	•
	Occupations	Meaningful occupations; celebrations (e.g., holidays, birthdays), offer daytime activities and workshops in CRF; explore interests	13	●	•	•	•
	Group activities (outings)	Offer group activities outside CRF (e.g., movies)	5	●	•	•	•
	Physical activities	Encourage/offer physical activities	5	•		•	•
	Employment	Support for finding/maintaining work	11	•	•	•	
	Community integration	Encourage community integration; accompany; explore community resources	9	•	•	•	•
	Social skills/network	Support interactions with family/friends; mediate/manage conflicts between residents; support for sex life; encourage/teach personal expression; offer support to residents' families	10	•	•	●	•
	Provide information	On: rights, health, diseases and symptoms, sexuality, recovery; medication and alternatives	8	●	•	•	•
	Transition and integration	Prepare placement and integration in CRF; support during transition; discuss grief, loss and integration; help with moving; introduce to neighbourhood; welcome residents	12	●	•	•	•
	Independent living	Help with finding/renting an apartment; finding roommate(s); support in supported housing (lack of)	11	●	•	•	●

CRF, Community-based residential facility; U, Service users; F, Family members; M, Managers, administrators and professionals supervising residential settings; S, Staff working in residential facilities and mental health workers.

Computer-Generated Point Map and Cluster Map

The 125 printed statements were grouped on average into 10.11 (SD = 4.16) clusters by participants (range = 2-20). The number of statements per cluster varied from 5 to 25 and averaged 11.67 (SD = 6.75). Based on the piles of statements made by participants, the MDS analysis produced an interpretable point map that displayed the 125 statements. Each of the 125 statements are indicated on the map by a dot and number (see dots in **Figure 1**). More similar or related statements are located nearer each other on the map, reflecting a high degree of conceptual similarity as judged by participants. Distance between dots would not change if the map was rotated or if clusters were modified. The stress value for the two-dimensional solution is 0.23 after 10 iterations and indicates a good representation of the participants' sorting (excellent correspondence between the model represented and the similarity matrix on the basis of concept mapping guidelines) (39, 50).

The original computer-generated cluster map configuration is shown in **Figure 1**. The cluster map consists of polygon-shaped boundaries on top of the point map. The research team selected the 12-cluster solution. The 13-cluster solution divided cluster 1 into 2 distinct clusters, but their content overlapped. The 11-cluster solution regrouped clusters 11 and 10 which appear to bring distinctive elements into the conceptualization. **Table 3** presents the 12 clusters along with each cluster average bridging index, random examples of statements, and statement mean importance ratings for each stakeholder subgroup. The statements and the clusters in **Table 3** can be identified on the map by their corresponding number (no). Bridging index range from 0.00 (statements no 52, 45, 62, and 72) to 1.00 (statement no 27). Clusters 2, 4, and 3 comprise relatively diverse statements with an average bridging index above 0.50

A review of subgroup comparisons suggests that there were more similarities than differences across cluster maps created for each of the four stakeholder groups. Numerous groupings of statements were consistent across participants, although

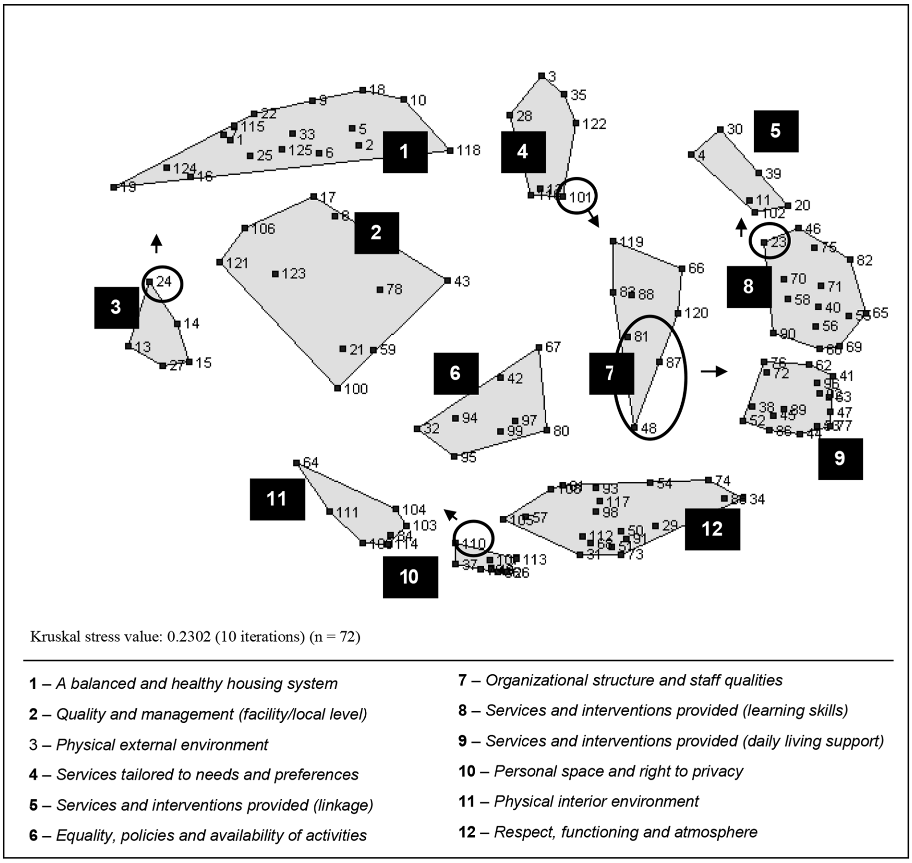

FIGURE 1 | Computer-generated two-dimensional cluster map of the attributes of community-based residential facilities (number of statements = 125).

individuals contributed different labels. For instance, many operators and staff working in residential facilities classified statements in terms of who was responsible for a given matter, for example, the housing agency (cluster 1), staff working in residential facilities (cluster 9), or community mental health teams or peripatetic staff (cluster 8). In other words, stakeholders' position within the system and their lived experiences had more of an influence on how clusters were labeled than on how statements were grouped.

Cluster Map as Modified by Stakeholders (Step 5)

The 12-cluster solution was kept by the participants during the final group session (step 5). The presentation of the map cluster-by-cluster allowed the participants to label each cluster (with a different language than found in the literature). They identified six statements that should be moved to a neighborhood cluster (see circles in **Figure 1**). The final cluster map is presented in **Figure 2**. The participants agreed on the location on the map of each of the 15 additional statements (125 + 15 = 140). For instance, statement no 136 was added to cluster 3 (see **Table 3**), the statement *"Availability of a transparent and simplified procedure to access community-based residential settings and housing"* was added to cluster 1 and *"Access to self-help groups of support for service users"* was added to cluster 5.

Cluster 1 A *balanced and healthy housing system* (18 + 7 additional attributes/statements) focus is on generating a well-coordinated, supportive and efficient system delivering an array of housing options for a variety of service user needs, abilities and preferences. It comprises attributes related to the availability of a range of housing options in terms of services provided, level of supports, lengths of stay, locations, and types of accommodations. Other attributes are related to the availability of sufficient local investments, the availability of trainings for staff and the continuous development of their expertise. Good management leadership, ongoing monitoring and the availability of support for property owner, residential facility managers and staff including during evenings and weekends are also included in this cluster.

Cluster 2 *Quality and management (facility level)* (10 + 2 attributes) is a relatively diverse group of statements with bridging values ranging from 0.42 to 0.74 (M = 0.53) (in other words, participants did not pile them together in a consistent way). It targets quality of care and management practices at the facility or local level. It includes attributes such as staff and mental health workers stability, the availability of a welcoming booklet explaining the basics of the housing functioning and of the neighborhood, the utilization of an anonymous quality of care indicators for family

TABLE 3 | Random statements from the final 12 clusters and importance ratings (mean) by stakeholder groups.

n°	Cluster (C) label and statements (average bridging index, SD)	n ^{b}	Mean importance (*SD*) Stakeholder groups ^{a}			
			S1		S2	
			U^{c}	F	M	S
	C1 – A balanced and healthy housing system (0.43, 0.13)	25				
2	*Have training programs for operators and staff working in community-based residential settings*		–	4.91 (0.30)	4.59 (0.57)	4.69 (.439)
9	*Have rapid access to housing (avoid long waiting lists)*		4.33 (0.93)	4.73 (0.47)	4.61 (0.52)	4.73 (0.46)
33	*Have flexible and non-restrictive admission criteria for residential facilities (include consumers who use alcohol and drugs)*		3.84 (1.07)	3.73 (1.22)	3.75 (0.94)	3.92 (1.04)
10	*Ensure good fit prior to integration in setting (make sure setting's attributes fit the person's characteristics)*		4.58 (0.59)	4.73 (0.47)	4.79 (0.41)	4.70 (0.53)
	C2 – Quality and management (facility/local level) (0.53, 0.11)	12				
78	*Maintain staff stability (limit turnover)*		4.11 (1.05)	4.36 (0.51)	4.31 (0.74)	4.86 (0.51)
106	*Adapt the physical environment of setting (accessibility and safety features)*		4.10 (1.00)	4.36 (0.67)	4.53 (0.57)	4.57 (0.65)
43	*Give consumers a handbook outlining facility policies, functioning and available services inside and outside the setting*		3.93 (1.08)	4.09 (0.70)	4.35 (0.66)	4.07 (1.03)
	C4 – Services tailored to needs and preferences (0.52, 0.09)	6				
12	*Modify support and services according to each service user's needs and condition (consumer does not have to move in event of gain or loss of functional autonomy)*		4.70 (0.49)	4.64 (0.51)	4.23 (0.75)	4.37 (0.66)
122	*Always ask the person where she or he wants to live first*		4.41 (0.80)	4.45 (0.52)	4.66 (0.55)	4.54 (0.54)
	C3 – Physical external environment (0.83, 0.11)	5				
14	*Have easy access to resources and services (e.g., grocery store, bank within walking distance)*		4.53 (0.71)	4.27 (0.65)	4.40 (0.61)	4.44 (0.63)
27	*Live in a normalizing neighborhood (i.e., access to leisure and services regardless of severity of illness)*		3.94 (1.02)	4.18 (0.60)	4.50 (0.57)	4.46 (0.64)
136	*Live in a safe and secure neighborhood (e.g., low criminality)*		4.23 (1.00)	4.18 (1.08)	3.38 (0.91)	3.61 (1.14)
	C11 – Internal physical environment (0.30, 0.14)	9				
110	*Live in an attractive, comfortable, clean environment*		4.68 (0.51)	4.36 (0.51)	4.61 (0.52)	4.56 (0.61)
111	*Have common areas in setting (e.g., kitchen, living room)*		4.65 (0.58)	4.09 (0.54)	4.25 (0.74)	4.45 (0.57)
	C10 – Personal space and right to privacy (0.12, 0.08)	7				
113	*Have access to a telephone in a private space*		4.51 (1.00)	4.36 (0.67)	4.56 (0.61)	4.54 (0.64)
37	*Be allowed to have sexual objects in privacy of own bedroom (e.g.,* pornographic magazines)		4.55 (0.76)	3.70 (0.95)	4.15 (0.78)	4.11 (0.87)
79	*Be allowed to refuse to participate in activities organized by setting*		4.31 (0.83)	4.00 (0.78)	4.47 (0.62)	4.33 (0.70)
	C12 – Respect, functioning and atmosphere (0.09, 0.05)	21				
112	*Live in a warm, humane setting*		4.06 (0.94)	4.55 (0.74)	4.74 (0.47)	4.56 (0.60)
51	*Create a setting where each person feels respected (e.g., civility)*		3.72 (1.02)	4.27 (0.91)	4.91 (0.28)	4.91 (0.22)
	C 6 – Equality, policies and availability of activities (0.24, 0.09)	8				
97	*Have clear, appropriate sanctions*		4.27 (0.93)	4.10 (0.88)	3.86 (0.96)	4.23 (0.72)
99	*Promote equality between staff and service users*		4.11 (0.96)	3.73 (1.27)	4.16 (0.80)	4.32 (0.86)
	C8 – Services and interventions provided (skills) (0.18, 0.08)	13				
56	*Assist/teach the person how to use public transit*		3.99 (1.54)	4.09 (1.14)	4.38 (0.61)	4.39 (0.67)
70	*Provide information on recovery and support*		4.28 (1.02)	4.10 (0.74)	4.44 (0.65)	4.48 (0.60)
71	*Provide information on citizenship and rights*		3.60 (1.44)	3.82 (0.87)	4.50 (0.57)	4.42 (0.69)
	C5 – Services and interventions provided (linkage) (0.38, 0.05)	8				
20	*Work together to support person's treatment and recovery plan (staff working in facility, community mental health workers, family, service users)*		4.50 (0.645)	4.82 (0.41)	4.74 (0.52)	4.77 (0.45)
4	*Provide support to service users' families*		3.98 (1.11)	4.73 (0.65)	4.21 (0.74)	4.32 (0.71)
	C9 - Services and intervention provided (daily support) (0.05, 0.04)	20				
52	*Provide reminders and help with hygiene*		4.63 (0.52)	4.55 (0.52)	4.36 (0.71)	4.66 (0.55)
44	*Supervise daily domestic activities (e.g., laundry, dishes)*		3.87 (1.14)	4.09 (0.54)	3.92 (0.62)	4.14 (0.68)
63	*Use an approach that focuses on consumer strengths and capacities*		4.42 (0.83)	4.60 (0.52)	4.78 (0.53)	4.81 (0.41)
	C7 – Organizational structure and staff qualities (0.24, 0.10)	6				
119	*Encourage interventions by peer-support workers*		3.77 (1.19)	4.18 (0.75)	4.18 (0.74)	4.03 (0.83)
88	*Have staff who believe in each individual recovery process and hopes*		4.21 (1.06)	4.73 (0.47)	4.76 (0.53)	4.69 (.439)
101	*Have staff with knowledge of issues related to mental health*		4.32 (0.89)	4.82 (0.41)	4.53 (0.55)	4.73 (0.46)

^{a}*U, Service users; F, Family members; M, Professionals, managers and administrators; S, Staff working in residential facilities and mental health workers; S1 = C+ F and S2 = M + S*

^{b}*140 statements (15 statements added in step 5 include statement n° 136)*

^{c}*n = 62 services users (completed the task)*

members and service users (survey), and the availability of specific services (e.g., activities in residential facilities, adapting the physical environment to reduce fall risk (e.g., for elderly), menus reviewed by nutritionists).

Cluster 3 *Physical external environment* (4 + 1 attributes) is the smallest cluster. It regroups statements related to the quality of the external physical environment and suggests the importance of aspects of neighborhood such as access to

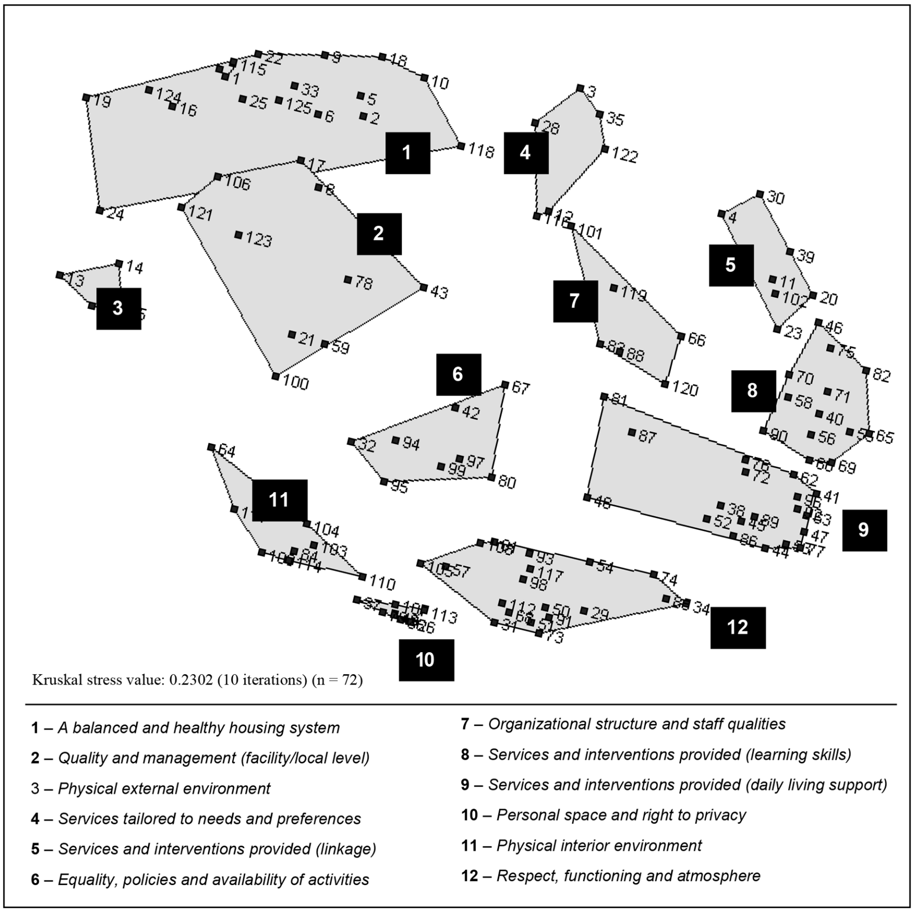

FIGURE 2 | Final two-dimensional cluster map as modified by stakeholders (number of statements = 125) (step 5).

community resources and local stores (proximity to), greenery, availability of public transportation and neighborhood safety and acceptance of individuals with mental illness. This cluster has the highest average bridging index (range = 0.42 to 0.74, M = 0.83) despite the apparent relationships among statements.

Cluster 4 *Services tailored to needs and preferences* (6 attributes) focus is on fit. It comprises attributes describing the provision of flexible services tailored to needs, abilities, and preferences. It emphasizes the evaluation process and access to flexible levels of support (when needed without having to move) including mental health and physical health services. Finally, it addresses the notion that service users' informed choice of living environment has to be accommodated as much as possible.

Cluster 5 *Services and interventions provided - linkage* (7 + 1 attributes) is a reminder of the variety of the actors involved and of the importance of a real partnerships between them: family members, professionals from outside the setting, treating teams, landlords, community associations, and the service user. Two statements concern the availability of support and communication during service user transitions between places of residence. One statement mentions the provision of support to family members (statement no 4, **Table 3**) and another refers to their continuous integration in the care process.

Cluster 6 *Equality, policies and availability of activities* (8 attributes) focus on functioning. It mostly comprises attributes related to rights, a democratic management style [e.g., *To have a residents' committee running in each setting* (…), *To have clear and appropriate sanctions (only when required)* (…)]. Access to activities inside and outside the setting and equality/respect between staff and service users are also attributes included in this cluster.

Cluster 7 *Organizational structure and staff qualities* (6 attributes) is about having competent and available staff/mental health workers *who believe in each individual recovery process and hopes*. Statements also comprise to offer the opportunity for peer support services, to reduce staff turnover, and to ensure that staff and operators have competencies in mental health, crisis management, recovery-based practices, and challenging behaviors.

Cluster 8 *Services and interventions provided (learning skills)* (13 attributes) is composed of attributes describing the provision of support aimed at acquiring practical, problem-solving and social skills, and encouraging autonomy: e.g., self-medication, transportation, and budget management, grocery shopping, occupational balance (including employment), emotions, and self-management.

Cluster 9 *Services and interventions provided (daily living support)* (19 + 1 attributes) also concerns services and intervention provided. It encompassed clinical activities, support and interventions as well as treatment orientations adapted to service user abilities and strengths. When compared to statements in cluster 8, the focus is on activities of daily living and making sure that needs are met for service users with different levels of functioning and illness severity: "*To have the service user's budget managed by staff to ensure effective/good management (have money left at the end of the month)*", "*To have staff in charge of medication to ensure effective management*", "*To make sure that the person takes a shower once a week*", "*To do things with the person instead of doing it*". Statements in this cluster were piled by participants consistently with bridging values from 0.00 to 0.15 (M = 0.05).

Cluster 10 *Personal space and right to privacy* (8 statements) comprises attributes related to space and privacy in the living environment such as *"To have the key to own place"* and *"To be allowed to choose the color and decoration to own bedroom"*.

Cluster 11 *Physical interior environment* (8 + 1 attributes) emphasizes interior appearance and decoration, cleanliness, common areas for service users and visitors, dedicated rooms for staff, and access to a computer/Internet and appliances.

Finally, cluster 12 *Respect, functioning and atmosphere* (19 + 2 statements) contains the most statements. It is about respect (respectful language, politeness, consideration for religious differences) and atmosphere (celebrate birthday, have functional rules, have the possibility of socializing with other residents, have the possibility of eating with others) induced by peers and staff.

DISCUSSION

To our knowledge, this conceptualization effort is the first one to build on the perceptions and values of multiple stakeholders with a focus on comprehensiveness. Conflicting perspectives between actors, mostly between service users and mental health workers, have been reported in the literature in relation to specific components of care such as housing preferences (2, 52, 53) and atmosphere [e.g., (54)]. The results of our analyses show overall concordance in relation to the attributes to be used to describe the array of community-based residential settings (sub-themes/codes generated by the stakeholder groups in the four regions), attributes relative importance (most statements were important) as well as conceptually (via sorting sub-analysis).

The GCM process was rich and produced numerous statements that were reduced to 140 attributes of housing and community-based residential settings for adults with severe mental illness. The participant-driven visual representation pictures housing as an input or independent variable (10). It suggests that housing should be apprehended and systematically measured beyond the types of housing and the intensity of services provided with a set of common attributes. Although a detailed discussion of each attribute and cluster is beyond the scope of this paper, housing research has addressed most of these over the last five decades. Moreover, the literature includes several tools developed to assess one or several of the different groups of attributes represented in our conceptual model. Also, beyond the scope of this paper, a review of existing instruments was included in the second phase of the research program (38).

Further Analyses of the Generated Conceptual Model (Step 6)

It became apparent that the location of attributes on the maps could be interpreted in relation to proximity to the individual living in a housing setting (**Figure 2**). Statements in the upper part of the map reflect a broader system perspective. This part of the map regroups attributes related to housing and community-based residential settings at the agency (clusters 1 and 4) or at the facility/local level (clusters 2 and 5). Statements in the lower part of the map are concerned with the service user proximal environment either physical (clusters 10 and 11) or social (cluster 12) as well as with the services and interventions received daily in the milieu and adapted to one's needs, abilities, and strengths (cluster 9). Statements in the middle part of the map are reflective of service user interactions with several actors (mainly staff or property managers: clusters 6 and 7) and with their neighborhood (e.g., cluster 3 in relation to the environment and cluster 8 in relation to services). Indeed, several of the services and interventions comprised in cluster 8 require the person to interact outside of the setting therefore shifting away activities from the setting. Also apparent is the fact that services and interventions are grouped on the right side of the map. On the left side of the map we find attributes generally related to the physical environment. In the middle part of the map (from top to bottom), we find attributes related to the social and organizational environment (management practices and orientations at the agency/region level (clusters 1 and 4) or in a housing setting (cluster 6) and the atmosphere induced by the relationships between peers, staff, or property managers (cluster 12).

Thus, the two-dimensional map can be apprehended using its two axes. The horizontal axis becomes the focus used to characterize the human environment: (1) physical environment; (2) social and organizational environment including relationships, and (3) interventions and services. The vertical axis is the geographical dimension: (1) the immediate setting (micro level); (2) the external setting, including the neighborhood, peripatetic mental health workers, family members, and the community (mezzo level); and (3) the system or housing agency (macro level). This dimension illustrates the interface between several sectors and actors (e.g., community, family, non-profit, and public sectors) as well as the different levels of analysis characterizing this complex health intervention. These levels show apparent congruence with the conceptual framework proposed by Tansella and Thornicroft for mental health services (32) and with the three conceptual models presented in the introduction (26, 27, 29, 31). Our conceptualization represents three out of the four levels comprised in these conceptual models. The person level (service user individual characteristics) was not considered as an attribute of the setting in this study (step 2) but it is included in the conceptual models of Hall, Nelson & Fowler (1987) and of Moos which illustrates the relationship between program and personal factors (27). Our conceptual model although using different labels and groups of attributes (clusters) also shows similarities with the other dimension (horizontal axis). It adds up all of the domains included in the three conceptual models. Interestingly, as two of these conceptual models were developed years ago, our conceptualization suggests that despite the evolution of housing models and approaches the attributes and dimensions as well as the levels of analysis to be used to describe the full spectrum of housing and community-based residential settings for adults with severe mental illness are relatively stable. It also incorporates an ecological perspective.

Key Elements of the Conceptual Model

This conceptualization is multileveled (geographical dimension—vertical axis) and multifaceted. It includes numerous components; some are independent (e.g., staff qualities, space arrangement) while others subsume several inter-related features (e.g., pleasant and warm milieu). It illustrates the complexity of housing and community-based residential settings, while at the same time keeping a focus on the micro level where the most attributes (brainstormed statements) are located (see lower parts of the map). These micro level attributes outline the fundamental potential influence of the immediate setting on service user outcomes. This is consistent with the fact that housing or the "home" is central to daily-life experience (29) and the fact that attributes at the micro level are thought to have more influence on individual outcomes (55). Our conceptualization illustrates that the immediate setting clearly affords opportunities for social interactions, care and treatment that go far beyond the formal and tangible interventions and support provided. The high number of statements located in the right side of the map also illustrates the fact that housing can vary widely in relation to programming. To better understand and capture this variation and its impact on service user outcomes is essential.

This conceptualization of community-based residential settings suggests that higher-level attributes deserve attention in an area where most research have focused on limited housing attributes or on a specific geographical level (mostly the micro level). Indeed, more research is needed to identify the most effective practices at the different levels of analysis. For instance, the stakeholders identified specific ways in which the system should support operators and staff working in residential facilities (cluster 1), as well as specific staff qualities and managerial practices likely to influence quality of housing programs (clusters 2 and 7) and outcomes for specific groups of service users.

This conceptualization portrays a multi-person system of interactions as well as interdependence and inter-relations at different levels and between clusters. For instance, looking at the provision of services and interventions (clusters 8, 9, and 5) some services are more likely to be provided by community or mental health workers (mezzo level), while others appear to be more proximal, inside the setting (micro level). Services not provided at one level could easily be compensated for at other levels. Inter-relations between clusters are also evident and can be interpreted in terms of statements/clusters distance on the map. For instance, the overlap between clusters 10 and 11 suggests a close relationship between architectural features and privacy. The overlap between clusters 1 and 2 suggests the influence of the system orientations at a local/facility level.

Finally, this conceptualization uses a unique language. Throughout the group sessions, the research team had realized that most family members, service users and staff or operators working in residential facilities did not expressed their ideas using a language typical of a recovery approach. However, they used different terms and gave concrete examples suggestive of recovery practices. They did not talk in terms of quality, governance, restrictiveness; again, they gave concrete examples. We therefore decided to keep words such a "healthy system" instead of replacing it with "effective" to stay true to the voice of the participants. We used this observation to adapt the content of the tool developed during the second phase of the research program (Phase II) and to be reported in a forthcoming publication.

Limits and Generalizability of the Conceptualization

The external validity of the results is reinforced by the variety of stakeholders and the wide range of settings involved. Concordance between the themes and sub/themes (the coding frame was based on existing literature) and the final cluster map as well as between the emerging conceptual model (map) and existing models reinforces the external validity of the results.

Both the conceptualization and the GCM process have their limitations. First, the choice made by the research team during content analysis when selecting the 140 generated statements might have influenced the conceptualization (38). Another important limit which reduced the amount of analyses made with ratings data is the fact that ratings for the service user stakeholder group represent the perspective of a subgroup of service users (due to missing data) probably with less severe mental health problems. Despite being incomplete the results suggest difference among the service user subgroups depending on living arrangement. However, once the research team could establish that most statements were important, rating data had very limited impact on the conceptual model presented in this paper as the maps were created based on the participant sorts. Finally, because a statistical package was used to compute the map, the research team did not explore a three-dimensional solution or other algorithm (42, 56).

CONCLUSION

The results of the present structured conceptualization illustrate the multifaceted and multilevel nature of community-based residential settings through a visual representation that facilitates comprehension. Concept mapping allowed a rigorous and systematic exploration of the attributes of housing and community-based residential settings ranging from high intensity 24-h congregate settings to independent apartments. The mobilization and involvement of multiple stakeholders allowed covering the entire conceptual domain and identifying components of different levels that might exert an influence on quality of care and outcomes. The results remind us that social and physical environment must be studied together and suggest 12 clusters and 2 dimensions that should be included in the operationalization of housing and community-based residential settings for adults with severe mental illness, including a detailed description of the services and interventions provided and of the governance of the housing system. Thus, the conceptual model provides a structure to guide service evaluation. To understand how housing and residential treatment programs influence the outcomes and behaviors of subgroups of service users, these need to be systematically measured.

DATA AVAILABILITY STATEMENT

The datasets generated and analyzed for this study can be obtained by contacting the corresponding author (AL).

ETHICS STATEMENT

This study involved human participants and was reviewed and approved by seven ethics review boards affiliated with the following health centres: (1) Institut Universitaire en santé mentale de Montréal; (2) Institut Universitaire en santé mentale Douglas; (3) CSSS de la Vieille-Capitale; (4) Hôpital du Sacré-coeur de Montréal; (5) CSSS de l'Énergie; (6) CSSS du Haut Richelieu-Rouville; (7) CSSS du Nord de Lanaudière. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

AF conceived and designed the project with supervision from MC and AL. AF and the research assistants collected the data and performed the statistical analysis with supervision from MC, AL, and MK from Concept System Inc. AF drafted the manuscript which was commented and reviewed by all authors.

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