Barriers to Outpatient Care among Emergency Department Users with Mental Disorders a Profile and a Mixed Methods Study

Tiffany Chen, M.Sc. B.HSc.

Department of Psychiatry McGill University Montreal, Quebec



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ABSTRACT

Introduction: The prevalence and associated social and economic burden of patients with mental disorders (MD) has resulted in a Canadian public health crisis. Despite the efforts of recent healthcare reforms, a significant portion of patients with MD continue to rely heavily on emergency departments (ED) for care. This is particularly concerning as the ED is not equipped to address psychosocial needs or provide follow-up care. ED users with MD, especially high ED users with MD, are more likely to be socially and materially deprived, have more concurrent disorders, have higher rehospitalization rates, and overall high service use compared to those who present to the ED for other conditions or reasons. This suggests that ED users with MD may perceive unique barriers to care and unmet needs. However, previous studies have mostly evaluated "having or not having" unmet needs without examining the number or types of structural and motivational barriers to care. Additionally, few profile studies have been conducted on high ED users with MD, and none to our knowledge have been related to barriers to care.

Objectives: The purpose of this thesis was to investigate perceived unmet needs of ED users with MD and especially structural and motivational barriers to care of high ED users to better understand psychiatric ED use and recommend more targeted interventions to improve outpatient care. This thesis had two objectives: (1) to identify ED service use profiles based on the patients' perceived barriers to care and associate these ED profiles with their sociodemographic and clinical characteristics and (2) to assess the associated patient characteristics and service use patterns in addition to the structural and motivational barriers to care that could explain high ED use among patients with MD.

Methods: Data was extracted from a 2021-2022 survey and medical records of ED users with MD in large psychiatric ED networks in Quebec. For the first study, cluster algorithms and comparison tests identified three ED user profiles based on the patients' perceived barriers to outpatient care and service use. For the second study, a mixed methods approach (multivariable regression, content analysis) identified variables associated with the number of perceived unmet care needs, and structural and motivational barriers to care explaining high ED use.

Results: The first article identified three distinct profiles and found the subgroup that perceived the most barriers to care were often high ED users with lower service satisfaction and having worse perceived mental/health conditions. In the second article, high ED users dissatisfied with services and perceiving more health issues (except suicidal behavior) had more barriers to care. Overall patients with no perceived unmet needs were more satisfied with outpatient care. High ED users with high unmet needs found healthcare providers didn't take them seriously enough, whereas patients with no unmet needs were rarely dissatisfied, except in the case of addiction treatment centers. Moreover, patients with suicidal behaviors said they felt less stigmatized and that healthcare providers took their concerns more seriously. Additionally, high ED users with high unmet needs, especially in terms of accessibility, continuity and adequacy of care. Outpatient services were often deemed unreliable, and patients were mostly referred to the ED due to doctors' inexperience with crises and care inconsistency.

Conclusions: The study findings suggested several recommendations to improve the quality of outpatient services and better address the perceived unmet needs of ED users with MD. These strategies include improving access, coordination and continuity of mental health care, and increasing patient knowledge of mental health and addiction services. This encompasses implementing more crisis teams and home treatment teams, intensive case management, brief interventions and peer support.

RÉSUMÉ

Introduction : Malgré les efforts des récentes réformes en santé, un grand nombre de patients avec troubles mentaux (TM) continuent de se tourner en premier recours vers les services d'urgence (SU) – un fait préoccupant, les SU n'étant pas aptes à fournir un suivi ou des soins psychosociaux adéquats. Les utilisateurs des SU avec TM sont souvent socialement et matériellement défavorisés, ont des troubles concomitants, des hospitalisations fréquentes et utilisent davantage de services; ils pourraient donc percevoir plus de barrières d'accès aux soins et de besoins non satisfaits que d'autres patients. Les études antérieures ont surtout évalué la présence ou l'absence de besoins insatisfaits, sans examiner le nombre ou les types de barrières structurelles et motivationnelles inhibant l'accès aux soins de santé. Peu d'études s'intéressent aux profils des grands utilisateurs des SU avec TM, et aucune n'a associé ces profils à de telles barrières.

Objectifs : Le but de cette thèse était d'examiner les besoins non satisfaits des utilisateurs des SU avec TM, ainsi que les barrières structurelles et motivationnelles d'accès aux soins des grands utilisateurs des SU, ceci pour mieux comprendre l'utilisation faite des SU psychiatriques et recommander des interventions visant à améliorer les soins ambulatoires. Ses deux objectifs sont : (1) identifier les profils d'utilisation des SU en se basant sur les barrières aux soins ambulatoires que perçoivent les patients, puis associer ces profils aux caractéristiques cliniques et sociodémographiques de ces patients; (2) évaluer ces caractéristiques, profils d'utilisation et barrières afin d'expliquer la forte utilisation des SU chez les patients avec TM.

Méthodes : Données tirées d'une enquête de 2021-2022 et des dossiers médicaux de patients avec TM ayant utilisé les SU psychiatriques du Québec. Étude 1 : Des algorithmes de groupage et tests comparatifs ont permis d'identifier trois profils d'utilisateurs basés sur les barrières perçues d'accès aux soins ambulatoires et aux services. Étude 2 : Les variables associées au nombre de besoins non satisfaits et aux barrières d'accès aux soins furent identifiées par méthodes mixtes (régression multiple, analyse de contenu).

Résultats : Trois profils furent identifiés dans le premier article. Le sous-groupe percevant le plus de barrières aux soins était composé de grands utilisateurs des SU peu satisfaits des services

et se percevant en moins bonne santé physique et mentale. Le second article détermina que les grands utilisateurs des SU insatisfaits des services et percevant plus de problèmes de santé (sauf comportements suicidaires) avaient plus de barrières aux soins. Les grands utilisateurs des SU avec besoins non satisfaits ne se sentaient pas pris au sérieux, alors que les patients sans besoins insatisfaits étaient rarement insatisfaits des soins ambulatoires, sauf dans les centres de traitement des dépendances. Les patients ayant des comportements suicidaires se sentaient moins stigmatisés et pris plus au sérieux par les prestataires de soins. Les grands utilisateurs des SU ayant des besoins non satisfaits percevaient plus de barrières que ceux sans besoins insatisfaits, surtout dans l'accessibilité, adéquation et continuité des soins. Les services ambulatoires étaient souvent jugés peu fiables, les patients étant fréquemment référés aux SU dû au peu d'expérience des médecins en gestion de crise, et au manque d'uniformité des soins.

Conclusion : Plusieurs recommandations sont suggérées pour améliorer la qualité des services ambulatoires et répondre aux besoins non satisfaits des utilisateurs des SU avec TM : amélioration de l'accès, coordination et continuité des soins en santé mentale (SM); mieux informer les patients des services en SM et dépendance; augmenter le personnel en gestion de crise, traitement à domicile, gestion intensive des cas, interventions brèves et soutien par les pairs.

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LIST OF ABBREVIATIONS

- ACT = Assertive community treatment
- AIC = Akaike's Information Criterion
- AUDT = Alcohol Use Disorders Test
- BDCU = Banque de Données Communes des Urgences
- BIC = Bayesian's Information Criterion
- CAN = Camberwell Assessment of Need questionnaire
- CCHS = Canadian Community Health Survey
- CIHI = Canadian Institute for Health Information
- CIHR = Canadian Institutes of Health Research
- CISSS = Health and social service centers
- CIUSSS = Integrated university health and social service centers
- CLSC = Local community healthcare centers
- CPI = Chronic Physical Illnesses
- DAST = Drug Abuse Screening Test-20
- DBT = Dialectical behavioral therapy
- ED = Emergency department
- GP = General practitioner
- I-CLSC = Système d'information des centres locaux de services communautaires
- ICM = Intensive case management
- ISQ = Institut de la statistique du Québec
- MANQ = Montreal Assessment of Needs Questionnaire
- MD = Mental disorder
- MED-ÉCHO = Système de maintenance et d'exploitation des données pour l'étude de la
- clientèle hospitalière
- MSSS = Quebec Ministry of Health and Social Services
- PNCQ = Perceived Need for Care Questionnaire
- PSH = Permanent supportive housing
- SRD = Substance-related disorders
- WHO = World Health Organization

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Dr. Marie-Josée Fleury was my Master's supervisor and principal investigator of the ongoing CIHR research project, "High ED users for mental health reasons and recommendations for improving services," which this thesis study was part of. She was responsible for funding acquisition, project administration, supervision, conceptualization, methodology, review, and editing and was the corresponding author for both articles.

Zhirong Cao provided the quantitative analysis for the first article and statistical support for the second article.

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Chapter 1- Introduction

According to the World Health Organization (WHO), a mental disorder (MD) is characterized by a clinically significant disturbance in an individual's cognition, emotional regulation, or behaviour (WHO, 2022). Symptoms of MD are also often associated with distress or impairment in important areas of functioning. In Canada, more than 5 million people currently meet the diagnostic criteria for MD, including substance-related disorders (SRD) (Statistics Canada, 2023a). The prevalence and associated individual, social and economic burden of MD has resulted in a public health crisis across many Canadian jurisdictions, including Quebec (Fleury et al., 2019a). Despite the efforts of recent healthcare reforms and increased specialized mental health services, a significant proportion of patients with MD and SRD continue to rely heavily on hospital emergency departments (ED) for care (Niedzwiecki et al., 2018; Barratt et al., 2016; Kaltsidis et al., 2021). This is particularly concerning as the ED is not equipped to address psychosocial needs or provide long-term follow-up care and has resulted in ED overcrowding, which reduces quality of care (Kenny et al., 2020; Savioli et al., 2022).

ED users with MD often have more concurrent disorders, compared to those who present to the ED for only a physical health problem (Gentil et al., 2021a; Niedzwiecki et al., 2018). As a result, patients with MD are often perceived by clinicians and other healthcare professionals as more difficult to treat and more demanding of their time and energy (Barratt et al., 2016; Roennfeldt et al., 2021). High ED users with MD also face a lot of the same issues as general ED users with MD, but to a greater extent. High ED users with MD, also known as "frequent users" are patients who visit the ED for mental health reasons four or more times per year (Gentil et al., 2021b; Kromka et al., 2019; Armoon et al., 2022). Published studies use a range of definitions to describe high ED users, the minimum being 3 per year and the maximum being 12 or more per year (Matsumoto et al., 2017). However, the most commonly used standard to define high ED users is 4 or more individual ED visits per year, which is also the definition used for this thesis (Matsumoto et al., 2017). As a result, a vital research target has involved profiling and identifying reasons for high ED use among patients with MD in the hopes of better managing high ED users, reducing excessive health care expenses, and improving quality of health services (Birmingham et al, 2016).

The majority of the literature on high ED users with MD have been quantitative investigations examining associated variables that predict high ED use (Kromka et al., 2019; Armoon et al., 2022; Gentil et al., 2021b). Sociodemographic characteristics such as being young, single, poor, homeless and clinical characteristics such as serious MD, co-occurring SRD and chronic physical illness have been associated with high ED use (Schmidt et al., 2018). However, few studies have examined service use patterns (Fleury et al., 2019a; Vandyk et al., 2014). In terms of typology studies, most have not been on ED users with MD alone, but rather on patients with overall chronic health conditions, where a few high ED user profiles with MD are identified (Moe et al., 2021; Chiu et al., 2021; Fleury et al., 2020). Among the limited typology studies that focused on ED users with MD alone, very few have examined patient service use patterns as well (Fleury et al., 2020; Armoon et al., 2022).

Considering that high ED use is often seen as an indicator of public health burden that reflects a healthcare system's insufficient quality, high ED users with MD may perceive unique unmet needs and barriers to care. Most studies on unmet needs among patients with MD have been quantitative investigations examining associated clinical and sociodemographic characteristics explaining unmet needs (Urbanovski et al., 2017; Cadigan et al., 2019). Most studies have assessed met and unmet needs on a binary scale (yes/no) (Dezetter et al., 2015; Urbanovski et al., 2017; Hyshka et al., 2017), and very few have assessed the number of unmet needs (Kosteniuk et al., 2022; Armoon et al., 2024; Broadbent et al., 2008). Of these studies, several studies have found perceived unmet needs among patients with MD to be associated with being female, younger age, lower income (Rens et al., 2022), stigma (Ostrow et al., 2014) and co-occurring MD-SRD (Urbanovski et al., 2017), and poor physical health (Andrade et al., 2014; Dezetter et al., 2015; Manuel et al., 2018).

In the literature, barriers to outpatient care alone are rarely examined among patients with MD (Coombs et al., 2021). More often, barriers to care are included as a component to explain unmet service needs (Fikretoglu & Liu, 2015; Rens et al., 2022; Olsson et al., 2021). The majority of studies have been quantitative, and have reported motivational (also known as attitudinal barriers) barriers to care (Cadigan et al., 2019; Harris et al., 2016; Fikretoglu & Liu, 2015; Rens et al., 2022; Olsson et al., 2022; Olsson et al., 2021), while a few reported structural barriers (Kosteniuk

et al., 2022; Han et al., 2017; Hyshka et al., 2017; Walker et al., 2015) as the primary reasons underlying perceived unmet needs. Overall, no typology has linked profiles of barriers to care explaining unmet service needs among high ED users with MD. Moreover, to our knowledge, no article has focused on the number of barriers to outpatient care, as found in our study. Additionally, very few mixed methods or qualitative studies on unmet needs have explored the reasons behind high ED use among patients with MD (Li et al., 2022; Fleury et al., 2023; Poremski et al., 2020). Of these studies, most have revealed a combination of structural and motivational barriers to care (Poremski et al., 2020; Fleury et al., 2024). The structural barriers mentioned were often long waiting times, lack of continuity and adequacy in outpatient care as well as motivational barriers such as high mental health stigma, and desire to self-managed care (Wilson et al., 2023; Wise-Harris et al., 2017).

1.1 Thesis rationale and objectives

As mentioned above, high ED users have been historically targeted to reduce ED overcrowding and associated public health burden (Birmingham et al, 2016). Considering patients with MD including SRD are among the largest contributors to high ED use, a better understanding of their perceived unmet needs and barriers to care can help address issues regarding quality of care and inform decision-makers on evidence-based strategies to target the unmet needs of this vulnerable population. Previous studies have evaluated "having or not having" unmet needs, without examining the number or types of structural and motivational barriers to care (Dezetter et al., 2015; Urbanovski et al., 2017). Additionally, few profile studies have been conducted on high ED users with MD. To our knowledge, none have been conducted related to barriers to care. Therefore, the main purpose of this thesis was to investigate unmet needs of ED users with MD and especially structural and motivational barriers to care of high ED users to better understand psychiatric ED use and recommend more targeted interventions to improve outpatient care. This research poses two specific objectives:

• To identify service use profiles based on the patients' perceived barriers to outpatient care and associate these profiles with sociodemographic characteristics and clinical characteristics

• To assess the associated patient characteristics and service use patterns in addition to the structural and motivational barriers to care that could explain high ED use among patients with MD.

Each specific objective of this thesis has become the main objective of a scientific article. In total, two articles have been written according to standard scientific article format. The articles are presented in Chapter 5 of this thesis:

- The first article entitled, "Profiles of Emergency Department Users with Psychiatric Disorders Related to Barriers to Outpatient Care" has been published in the journal, International Journal of Environmental Research and Public Health (Chen et al., published in IJERPH, 2024).
- The second article entitled, "Barriers to Care among High Emergency Department Users with Mental Disorders A Mixed Methods Study" is currently under peer review in an international peer-reviewed journal (Chen et al., in submission, 2024).

Chapter 2- Literature review

This chapter has three sections. The first section broadly introduces the mental health system in Quebec and the organization of services. The second section discusses the role of the ED in the mental health care system and its research significance. The third section covers literature surrounding ED users and high ED users with MD, unmet needs and barriers to care of patients with MD in both the context of ED and globally.

2.1 Mental health system in Quebec and the organization of services

Healthcare delivery in Canada predominantly relies on a universal, publicly funded health system. The provincial governments manage healthcare delivery, while financial support is also provided by the federal government (Jarvis et al., 2023). In Quebec, health and social services are integrated within a single overarching administration, structured into nine service programs (e.g., mental health, SRD) and managed across large local networks since 2015 (i.e., integrated university health and social service centers (CIUSSS) or health and social service centers (CISSS)). The Quebec Ministry of Health and Social Services (MSSS) oversees the overall governance and management of provincial healthcare (Gouvernement du Québec, 2015). However, there is a reform undergoing that will change the organization of the healthcare system in Quebec and the role of the MSSS once again, with the creation of the new "Agence Santé Québec (Assemblée nationale du Québec, 2024).

Currently, healthcare services are delivered into three "service lines." The first line, "primary care," targets the general population or clients with special needs (e.g., common MD). These services include medical services (e.g., general practitioner (GP) clinics, family medicine groups, walk-in clinics, etc.), psychologist services mostly working in the private sector, psychosocial services such as mental health teams at community healthcare centers (CLSC), community-based organizations (e.g., crisis centers, suicide helplines, rehabilitation services (day centers, workshops, etc.)), peer self-help groups (for MD, Alcohol Anonymous), etc.). These services are directly accessible and provided in local settings. The 2nd line, or "specialized services," usually requires a referral. These specialized services tackle complex health and social problems and encompass hospital psychiatric departments, ED (sometimes classified in primary care as 24/7 accessible care, no needing referral process), hospitalization units, day hospitals, outpatient clinics (often specialized around serious MD and common MD), brief intervention units, short-stay crisis units, intensive home care, addiction treatment centers (no needing referral process), etc. As a result, these services are found in local or sub-regional areas across the province. Finally, the 3rd line, or "ultra-specialized services," are offered on a supra-regional basis or in university health regions, concentrated in a limited number of settings. These services include early intervention programs for psychosis, eating disorder programs, long-term stay psychiatric units, etc. They are usually only available through referrals to assess rarer yet complex health and social problems.

2.1.2 Healthcare system legislations and action plans

Since 2015, the province has undergone extensive reforms, among other things, to make the health care system more accessible, efficient, and flexible for the public. These reforms integrated action plans (e.g., in mental health, 2022-2026) to focus on a number of priority areas, including the consolidation of some services in ED (e.g., brief intervention units).

In 2017, the Commissaire à la santé et au bien-être also published "Utilisation des urgences en santé mentale et en santé physique au Québec" to provide relevant insights into public debate and government decision-making to contribute to improving the health and well-being of Quebecers. To enhance the healthcare system's performance, better addressing high ED users with MD was one of the recommended changes (Gouvernement du Québec, 2017).

In 2022, the Quebec Government launched "Plan pour mettre en œuvre les changements nécessaires en santé (Plan santé)," which initiated a major shift in the organization of healthcare to focus on accessibility and quality of primary care and specialist services (Gouvernement du Québec, 2022). Building upon that, the 2022-2026 "Plan d'action interministériel en santé mentale" partly aims to increase the efficiency of ED and facilitate the monitoring of patients with MD to better address their needs. The plan included the deployment of nurse practitioners specializing in mental health in certain ED and local services; the establishment of brief intervention units in psychiatry, as well as brief intensive treatments at home; then rapid intervention and mental health relay teams acting in the community (Gouvernement du Québec,

2022). The brief intervention units in psychiatry allowed patients who present to the ED (experiencing an episode of acute psychiatric crisis) to be treated for a short stay (up to 72 hours) and to receive the best evidence-based interventions. Moreover, the implementation of brief intensive treatments provided by a home support team offers an alternative to long-term hospitalizations and allows continuity of care, which also reduces the likelihood of recurrent ED use. Specialized rapid intervention and mental health relay teams also offered a detailed follow-up to patients discharged from the ED and provided liaison between the patient and other services in the community when necessary (Gouvernement du Québec, 2022; Gabet et al., 2020).

With similar goals, the Plan stratégique 2023–2027 of the Ministry of Health and Social Services (MSSS) is a continuation of the Plan santé. It emphasizes the objectives of timely access to care and services by 1) enabling rapid access to mental health services and 2) improving access to ED services (Government of Canada, 2024). The indicator proposed in this strategic plan measured access to mental health care and services according to response times in various services, including CLSCs, community support services, specialized outpatient clinics, emergency services, and for those requiring hospitalization to ensure timely access to mental health services. They also measure the average ED turnaround time for all clients and the average length of stay on a stretcher to monitor ED efficiency. In terms of recommendations, this strategy plan also highlights the importance of collaboration and coordination between the Ministry of Education, the Ministry of Public Security, the Ministry of Health and Social Services, and their partners to establish a coherent continuum of services that adequately meet the needs of various groups, in terms of mental health and well-being, and violence prevention.

2.2 The role of the ED in the Quebec mental health system and its research significance

The ED provides 24/7 accessible care to patients in need and treats urgent medical problems. In Quebec, the ED is organized into primary, secondary, and tertiary categories, but all perform triages, stabilizations, and resuscitation operations for patients (Gouvernement du Québec, 2022). The ED, therefore, serves a crucial role in the healthcare system, as they are often the main entry point for patients with urgent medical needs and the follow-up choice when primary care or specialized care services are not available (Gouvernement du Québec, 2022; Fleury et al., 2019a). As a result, the ED and those who utilize its services act as an indicator of public health

burden, reflecting the healthcare system's insufficient quality and any issues surrounding access, continuity, or adequacy of care (Mostafa & El-Atawi, 2024).

As mentioned in Chapter 1, patients who frequently use ED, often called high ED users, are defined as having made at least four or more ED visits per year (Matsumoto et al., 2017). Recent surveillance data indicate that 10-17% of Canadians who visited the ED for a MD or SRD are high ED users (Canadian Institute for Health Information (CIHI), 2022; Fleury et al., 2019a). Notably, from 2017 to 2023, there has also been a 27% increase in the number of high ED use for mental health reasons (CIHI, 2023). Since the ED should be a last resort of care but has become a first point of contact for many of these patients, this suggests high ED users with MD may perceive unique unmet service needs and barriers to outpatient mental health care (Barker et al., 2020). Therefore, profiling high ED users with MD and developing a better understanding of their unmet needs and barriers to care is crucial for improving the quality and adequacy of outpatient services and reducing their high ED use.

2.3 Profiles and associated variables of high ED users with MD

Since high ED users consisted of the majority of the sample in the first article and found to be the most important patients for whom we should improve services because of the high cost and vulnerability related to these patients, the second article focused on the subgroup of high ED users only. Therefore, the remainder of this literature review will focus on studies related to high ED users with MD.

2.3.1 Quantitative investigations on high ED users with MD

The literature on high ED users with MD has predominantly focused on quantitative investigations using administrative databases and medical records (Kromka et al., 2019). Specifically, the data is derived from billing systems collecting minimal personal and clinical information about the patient and their ED use. The majority of these studies examined sociodemographic and clinical characteristics to identify patient profiles and associated variables that predict high ED use (Armoon et al., 2022; Gentil et al., 2021b; Kromka et al., 2019; Fleury et al., 2019a; Slankamenac et al., 2020). A 2019 literature review summarizing 31 articles published between 1986 and 2018, identified that the majority of ED studies extended over one

to five years and retrospectively examined clinical-administrative data from cohorts of ED patients including samples of 34 to 71,600 individuals, with an average of 5,277 patients (Armoon et al., 2022; Casey et al., 2021; Gentil et al., 2021b; Kaltsidis et al., 2021; Kromka et al., 2019; Slankamenac et al., 2020).

As mentioned in the introduction, studies investigating high ED users with MD have also mostly found patients to be mostly young adults, single, male, and with poor socioeconomic status (low level of income and education) (Chiu et al., 2021; Vandyk et al., 2014; Fleury et al., 2019a). Additional factors such as lack of housing or poor quality housing (Armoon et al., 2022; Casey et al., 2021; Schmidt et al., 2018) and lack of social support (Casey et al., 2021; Gentil et al., 2021b; Slankamenac et al., 2020) have also been associated with high ED use. These patients often have higher mortality rates due to their increased risk of engaging in dangerous behaviors, which can also negatively affect their health and well-being (Niedzwiecki et al., 2018; Armoon et al., 2022). However, patient clinical characteristics are still deemed as the best predictor of high ED use (Aagaard et al., 2014; Kromka et al., 2019; Schmidt et al., 2018; Slankamenac et al., 2020; Wise-Harris et al., 2017). Several studies among patients with MD have found the strongest associations between high ED use and serious MD, such as personality disorders (Richard-Lepouriel et al., 2015; Chang et al., 2014), schizophrenia (Poremski et al., 2017), bipolar disorders (Aagaard et al., 2014) as well as comorbid medical conditions such as chronic physical illness and co-occurring SRD (Gentil et al., 2021a; Vandyk et al., 2013; Hudon et al., 2017). On the other hand, few studies have examined service use patterns associated with high ED use among patients with MD (Fleury et al., 2019a; Vandyk et al., 2014). One Canadian study examining factors associated with ED use among low, moderate, and high users with MD found that patients who consulted with outpatient psychiatrists and did not see a GP in the year prior to ED visit were associated with high ED use (Fleury et al., 2019a). Another Canadian study found that high ED for mental health reasons was associated with limited social support, personality disorder, regular antipsychotic use, self-reported alcohol use, and multiple referral sources (Vandyk et al., 2014).

Unlike the associated variable studies mentioned above, typology studies group patients according to similar characteristics. As mentioned in the previous section, typology studies that

include high ED users have mostly focused on patients with any medical condition, with most identifying one or two high ED user profiles among those with MD. Of these studies, most have only focused on sociodemographic variables and clinical characteristics, and few examined service use patterns (Moe et al., 2021; Fleury et al., 2020; Chiu et al., 2021; Gabet et al., 2022; Fleury et al., 2022). A Canadian study from 2021 identified four profiles of high ED users, two of which included MD: (1) very high ED users (average 13 visits/year) with co-occurring MD-SRD, mainly older men, with no GP and moderate death rates; and (2) high ED users (average five visits/year) with MD, mainly older women, and low death rates (Moe et al., 2021). A Quebec study identified four profiles of high ED users, one of which included MD: (1) highest ED users, with MD or SRD, mainly young, socially and materially deprived, and low contact with the healthcare system outside of EDs (Chiu et al., 2021). Another Canadian study found a profile of high ED users with multiple MD-SRD and high users of specialized health services (Fleury et al., 2020). Among the limited typology studies that focused on high ED users with MD alone, very few typology studies have examined patient service use patterns (Fleury et al., 2020; Armoon et al., 2022). A Quebec study identified three profiles of moderate ED users with MD: one comprised of young males with SRD who were low outpatient service users, one of middle-aged females with common MD, and one of older patients with co-occurring MD-chronic physical illnesses. Patients in these last two profiles mainly consulted GP. Also identified in that study was a fourth profile of high ED users with multiple MD-SRD using mostly specialized services (Fleury et al., 2020). Another Quebec study on recurrent high ED users with MD. Recurrent high ED users, also known as chronic high ED users, are high ED users who frequently visit the ED over several consecutive years (Krieg et al., 2016). For this study, it was defined as 8+ visits over the preceding 13-36 months. The study identified three recurrent high ED user profiles: (1) 3-year recurrent very high ED users, (2) 2-year recurrent high ED users, and (3) 1-year high ED users. Profiles 1 had higher occurrence of serious MD, SRD, chronic physical illnesses, suicidal behaviors, greater intensity of service use, particularly frequent hospitalizations, and higher risk of death compared to Profiles 2 and 3 (Armoon et al., 2022).

2.3.2 Qualitative and mixed methods investigations on reasons for high ED use

Over the last decade, a few qualitative and mixed methods design studies have explored the reasons given for high ED use of patients with MD (McCormack et al., 2015; Poremski et al.,

2020; Vandyk et al., 2018, 2019; Aagaard et al., 2014; Kaltsidis et al., 2021; Parkman et al., 2017; Schmidt et al., 2018; Wise-Harris et al., 2017; Fleury et al., 2024). Some of these studies applied a conceptual framework that was adapted from existing health system analysis models and guided the organization of themes (Damschroder et al., 2009; Fleury et al., 2019b; Fleury et al., 2024). This made it possible to group the themes into three categories of reasons contributing to high use of ED: factors linked to the mental health system (accessibility, adequacy, and continuity of care), patient profiles (social and health conditions, clinical characteristics) and professional practices (knowledge of MD and SRD, quality of healthcare delivery to patients, collaboration between clinicians). The qualitative studies were mostly based on semi-structured interviews including few patients and applied either a thematic or content analysis method (Poremski et al., 2020; Vandyk et al., 2018, 2019; Fleury et al., 2024) or phenomenological approaches (McCormack et al., 2015). Three studies also focused often on a specific subgroup of patients, namely high ED users with personality disorders (Vandyk et al., 2019), or high ED users with SRD (McCormack et al., 2015; Parkman et al., 2017). Overall, the qualitative investigations highlight that the main reasons for high ED use surround problems of access, continuity and adequacy of mental health care (Aagaard et al., 2014; Casey et al., 2021; Parkman et al., 2017; Poremski et al., 2020; Schmidt et al., 2018; Vandyk et al., 2018, 2019; Wise-Harris et al., 2017; Fleury et al., 2024).

Other studies have also mentioned the impact of negative healthcare experiences such as stigma, and not having concerns taken seriously on patient health seeking behavior (Aagaard et al., 2014; McCormack et al., 2015; Parkman et al., 2017; Vandyk et al., 2018, 2019; Wise-Harris et al., 2017). These studies also elaborate on what may have led patients to engage in risky behaviors, such as self-medicating or seeking help last minute that result in high ED use (Aagaard et al., 2014; McCormack et al., 2015; Poremski et al., 2020; Schmidt et al., 2018; Vandyk et al., 2018, 2019). Lack of social support (e.g., family, friends, community) (Aagaard et al., 2014; McCormack et al., 2015; Parkman et al., 2017; Schmidt et al., 2018; Vandyk et al., 2018, 2019) or professional support (e.g., clinicians, psychosocial workers and community services) to resolve their psychosocial problems, have all emerged as reasons for high ED use (Casey et al., 2021; Poremski et al., 2020; Wise-Harris et al., 2017). Involuntary visits to the ED due to being brought in by the police due to disruptive behaviors, being brought in by their loved

ones, or being referred by outpatient services have also increased ED use of certain patients with MD (Poremski et al., 2020; Vandyk et al., 2019; Wise-Harris et al., 2017). Lastly, the cyclical nature of high ED use has also been noted in certain studies to be associated with the perceived advantages of the ED, which include the ED being open 24/7 and providing a safe space for the response of unmet needs (Aagaard et al., 2014; Parkman et al., 2017; Poremski et al., 2020; Schmidt et al., 2018; Wise-Harris et al., 2017).

2.4 Unmet needs and barriers to care among patients with MD

Unmet service needs have often been used by healthcare systems worldwide to measure equality of access and barriers to care. Therefore, a common definition of unmet healthcare needs is "the differences between services judged necessary to deal appropriately with health problems and services actually received" (Carr & Wolfe, 1976). This is notable as the help received does not necessarily equate to met needs. Only when an individual asks for and receives the required help is a need considered met. On the other hand, a need may also be partially met if a patient does receive the initial help required but fails to obtain all parts of the care requested (Fleury et al., 2015). Additionally, a need will not be met if a first request for help is disregarded (Sunderland et al., 2013). Unmet needs have components of clinically objective and subjective patient perceptions of receiving appropriate care. For this thesis, we will focus on the latter, perceived unmet needs for mental healthcare.

2.4.1 Instruments to measure unmet needs

Assessing unmet needs is not always a straightforward process with a singular approach. Therefore, several techniques have been used to assess unmet needs with the help of different scales (Makivić et al., 2024). The most commonly used instruments to assess needs will be discussed in more detail below.

The Camberwell Assessment of Need questionnaire (CAN) (Phelan et al., 1995) was specifically developed to provide a comprehensive assessment of needs within 22 life domains and has been used in many clinical studies with patients mostly experiencing serious MD (AshaRani et al., 2022; Isaacs et al., 2019). Originally designed for clinical use, the questionnaire has been used to identify problematic life domains on an individual or service-related level, with available response choices of 0 = no serious problem; 1 = no serious problem or moderate problem because of continuing intervention (met need); and 2 = current serious problem (unmet need). In the literature, CAN has been widely used to explore differences in patients' and providers' perceived needs, to investigate the relation between unmet needs and quality of life or adequacy of care, and to measure service outcomes (Fleury et al., 2010). The Montreal Assessment of Needs Questionnaire (MANQ) was developed to address some of the limitations in the CAN, some of the most notable changes being the 3-point ordinal scale of the CAN being replaced with an 11-point scale for measuring perceived needs (Tremblay et al., 2014). In addition to covering the 22 CAN life domains, the MANQ also added four new domains (stress adaptation, social exclusion, involvement in treatment decisions, and job integration) to reflect patient recovery. The MANQ was originally designed to assist health planners in measuring the changes in needs of patients transferred from psychiatric care to primary care within the context of the 2005-2015 Quebec mental health care system reform (Fleury et al., 2016a; Fleury et al., 2016b).

The Perceived Need for Care Questionnaire (PNCQ) was specifically designed for epidemiological and health services research (Meadows et al., 2000). The PNCQ examines the types of services and interventions received by subjects, if they received enough care, and any barriers to outpatient care perceived (Meadows et al., 2000). Perceived needs were assessed in mostly four categories: information, counseling, medication, and "other," which, depending on the studies, included therapy, social intervention, and skills training. It was adapted for high prevalence disorders, such as depression and anxiety, and other vulnerable populations (homeless and patients with SRD) but has been rarely used to assess ED users and has been mainly used to assess unmet needs of the general population (Addorisio et al., 2022; Kosteniuk et al., 2022; Armoon et al., 2024). Like the CAN/MANQ, the PNCQ has categories of no need, fully unmet needs, and met needs but also integrates partially met needs. Overall, the PNCQ is briefer than the CAN/MANQ if the category "other" is used instead of therapy, social intervention, and skills training, where the latter is geared towards homelessness and the population with SRD. Thirteen choices of structural (e.g., long wait times) or motivational (e.g., preferring to self-manage symptoms) barriers to care are also investigated in the PNCQ (Kosteniuk et al., 2022).

Unmet healthcare needs are also an indicator measured in the Canadian Community Health Survey (Statistics Canada, 2020). The CCHS is a cross-sectional survey that collects data on health status, health care utilization, and health determinants of Canadians aged 12 and older living in private households in all provinces and territories (Statistics Canada, 2023b). Patients were asked, "During the past 12 months, was there ever a time when you felt that you needed health care other than homecare services, but you did not receive it?" If they answered yes, they were then asked to identify among 13 specific structural and motivational barriers to care. This includes structural barriers related to location, time, financial reasons, and personal barriers such as personal preferences or personal constraints. Most studies using the CCHS have focused on the general population (Islam & Kellet, 2022; Khattar et al., 2023). However, several studies have also examined relationships between certain MD or other chronic conditions with unmet healthcare needs (Wojkowski et al., 2016; McLeod et al., 2023). The CCHS was used in our two articles due to its short and condensed nature. Since our study targeted ED users, other needs questionnaires may have been too lengthy and time-consuming. The length of the CCHS was most ideal and ensured a higher response rate.

2.4.2 Overview of studies on unmet needs and barriers to care among patients with MD

As mentioned before, most studies on unmet needs among patients with MD are based on quantitative investigation (e.g., PNCQ, CCHS), focusing on clinical and sociodemographic patient conditions explaining unmet needs, and mainly assessed unmet needs on a binary scale (yes/no) (Kozloff et al., 2015; Migliorini et al., 2022). However, few studies on unmet needs have specifically examined high ED use or included service use patterns. Barriers to care among patients with MD are less studied in the literature, mainly included as a component integrated into unmet needs. To our knowledge, no previous study has only focused on barriers to care (specifically, the frequency of barriers to outpatient care), as found in our study.

2.4.2.1 Quantitative studies

2.4.2.1.1 Met vs. unmet needs and associated variables

Most studies assessed service needs as either completely met or completely unmet (Dezetter et al., 2015; Urbanovski et al., 2017; Hyshka et al., 2017; Harris et al., 2016; Migliorini et al., 2022; Fleury et al., 2015; Fleury et al., 2016c; Cadigan et al., 2019; Kozloff et al., 2015; Manuel et al., 2018; Fikretoglu & Liu, 2015; Rush et al., 2010; Walker et al., 2015; Rens et al., 2022; Shepard

et al., 2017; Duhoux et al., 2017). Most studies among patients with MD used the PNCQ, which further identifies types of unmet needs (information, counseling, medication, and "other") (Dezetter et al., 2015; Urbanovski et al., 2017; Hyshka et al., 2017; Harris et al., 2016; Migliorini et al., 2022; Fleury et al., 2015; Fleury et al., 2016c; Shepard et al., 2017). Among these studies, types of unmet needs related to counseling, information, and skills training related needs were most common, whereas needs for medication were the least common (Dezetter et al., 2015; Rush et al., 2010; Harris et al., 2016; Hyshka et al., 2017). Fewer studies have used the adapted CCHS, which assessed met vs. unmet needs more generally, which required a shorter time to administer compared to other instruments (Fikretoglu & Liu, 2015; Rush et al., 2010; Walker et al., 2015).

The main purpose of almost all these studies was to assess which variables were associated with unmet service needs (Dezetter et al., 2015; Urbanovski et al., 2017; Hyshka et al., 2017; Harris et al., 2016; Fleury et al., 2016c; Cadigan et al., 2019; Kozloff et al., 2015; Manuel et al., 2018; Walker et al., 2015; Duhoux et al., 2017). Most studies have only examined sociodemographic and clinical characteristics and have found perceived unmet needs to be associated with being female (Kozloff et al., 2015), younger age (Kozloff et al., 2015; Fleury et al., 2016c), lower income (Rens et al., 2022), stigma (Shepard et al., 2017) co-occurring MD-SRD (Urbanovski et al., 2017; Fleury et al., 2016c), and poor physical health (Dezetter et al., 2015; Manuel et al., 2018). Service use patterns regarding unmet needs are much less studied. One Canadian study found that patients with MD who received either primary or specialist care were less likely to report unmet needs and that relying solely on informal support did not improve the odds of meeting those needs (Urbanovski et al., 2017). In another Canadian study assessing the unmet needs of homeless adolescents with MD, perceived unmet healthcare needs were associated with the number of ED visits (Kozloff et al., 2015). On the other hand, one Ouebec study broadly found which patient characteristics were associated with types of unmet needs (Fleury et al., 2016c). Enabling factors such as neighborhood perception variables were strongly associated with unmet needs for information; clinical characteristics were strongly associated with unmet needs for medication; sociodemographic characteristics with unmet needs for information and medication; and service use patterns with unmet information and counseling needs (Fleury et al., 2016c).

2.4.2.1.2 Number of unmet needs and associated variables

As mentioned previously, the number of unmet needs is rarely assessed among patients with MD (Kosteniuk et al., 2022; Armoon et al., 2024; Broadbent et al., 2008). One Canadian study examining unmet needs among patients with SRD used the PNCQ to compare those with "high" unmet needs (3+ types of unmet needs) to those with no or "low" unmet needs (0-2 types of unmet needs) (Kosteniuk et al., 2022). High unmet needs for counseling and social interventions were most common, followed by information, medication, skills training, hospital care, and harm reduction (Kosteniuk et al., 2022). The study also examined associated variables and found that participants reporting recent criminal activity, adverse childhood experiences, transitory sleeping, having common MD, and having no community support worker were more likely to report a high level of unmet service needs (Kosteniuk et al., 2022). A recent Quebec study on adults in permanent supportive housing (PSH) also used the PNCQ to compare high (3+) and low (1-2) unmet needs while accounting for partially unmet needs (Armoon et al., 2024). The three most frequent types of partially or fully unmet needs were information, counseling, and financial support. Fully unmet needs were most prevalent in counseling. Associated variables were also assessed, and patients with co-occurring MD-SRD and with moderate or severe psychological distress were likely to have more unmet needs. Whereas living in healthier neighborhoods, having a better quality of life, and being more satisfied with housing and outpatient care were associated with fewer unmet care needs (Armoon et al., 2024). An older 2008 study from New Zealand on high users of mental health services used the CAN to assess the total number of unmet needs and their associated variables (Broadbent et al., 2008). This study was unique because data on both patient and staff perspectives were collected. More negative perceptions about MD, poorer attitudes towards medication, and lower functioning were associated with a higher number of unmet needs by both patients and staff (Broadbent et al., 2008).

2.4.2.1.3 Barriers to care and associated variables

A few studies mentioned in the previous section have also examined reasons for unmet needs by reporting specific barriers to care (Cadigan et al., 2019; Walker et al., 2015; Harris et al., 2016; Fikretoglu & Liu, 2015; Rens et al., 2022; Olsson et al., 2021; Kosteniuk et al., 2022; Han et al., 2017; Hyshka et al., 2017). These barriers were often categorized into two groups: motivational and structural barriers. Motivational barriers are demand-side barriers operating at the individual

level and influence help-seeking behavior (Jacobs et al., 2012). Structural barriers are supply-side barriers operating at the system level and are beyond the individual's control (Jacobs et al., 2012). Almost an equal distribution of studies have either reported structural barriers to care (Kosteniuk et al., 2022; Han et al., 2017; Hyshka et al., 2017; Walker et al., 2015) or motivational barriers (Cadigan et al., 2019; Harris et al., 2016; Fikretoglu & Liu, 2015; Rens et al., 2022; Olsson et al., 2021) as the primary reasons underlying global perceived unmet needs among adults with MD.

A few studies have also associated specific types of unmet needs with certain barriers to care (Dezetter et al., 2015; Kosteniuk et al., 2022; Hyshka et al., 2017). One 2015 Quebec study found that for patients reporting information, psychosocial interventions, or skills training unmet needs, the barriers to care were structural barriers related to accessibility (did not know how or where to get help and unavailable services). Patients who perceived structural barriers related to finances, such as "could not afford to pay," and motivational barriers, such as "preferring to manage by oneself," were associated with medication or psychotherapy unmet needs (Dezetter et al., 2015). Two Canadian studies on patients with SRD found similar findings. Barriers to counseling were split evenly between structural and motivational barriers, with 'I preferred to manage myself' being the most common (Kosteniuk et al., 2022; Hyshka et al., 2017). On the other hand, barriers to unmet social intervention needs were mostly structural. 'I was only allowed a limited amount of help' was the most mentioned barrier for this service type (Kosteniuk et al., 2022; Hyshka et al., 2017). However, no typology has linked profiles of barriers to care explaining unmet service needs among ED users with MD. To our knowledge, no article has only focused on the number of barriers to outpatient care, as we do in our study.

2.4.2.2 Qualitative and mixed methods studies

Few studies have used mixed methods or qualitative approaches to examine unmet service needs among patients with MD (Li et al., 2022; Fleury et al., 2023; Poremski et al., 2020). A mixed-method study identified that the service needs most associated with high ED use included the need to talk to someone, obtain medication, find relief from psychiatric symptoms, or be hospitalized (Schmidt et al., 2018). In terms of qualitative research on unmet needs, we found five studies that well explained reasons for high ED use, revealing a combination of structural

and motivational barriers to care, with structural barriers being the most frequently mentioned (Poremski et al., 2020; Fleury et al., 2019c; Fleury et al., 2024). The most frequently identified structural barriers contributing to high ED use were long waiting times for accessing services, lack of continuity and adequacy in outpatient care, and lack MD expertise among primary care clinicians (Poremski et al., 2020; Fleury et al., 2019c; Fleury et al., 2024). The most commonly mentioned motivational barriers included perceived stigma, a desire to self-manage care, and a loss of confidence in outpatient services (Wilson et al., 2023; Wise-Harris et al., 2017).

Chapter 3- Methodology

The present study was part of the ongoing research project "High ED users for mental health reasons and recommendations for improving services" (Canadian Institutes of Health Research, 8400997) led by Marie-Josée Fleury, Professor at the Department of Psychiatry, at McGill University and Researcher at the Douglas Hospital Research Centre. The overall research project aimed to better understand the reasons for high ED use among patients with MD including SRD in Quebec. The thesis research investigated unmet needs of ED users with MD and especially barriers to outpatient care of high ED users to better understand psychiatric ED use and recommend more targeted interventions to improve outpatient care.

In this chapter, we will successively present the study design, including the setting, sample, data collection and data analysis. When the methods are the same for both articles (e.g., data collection), the information will be integrated in the presentation, when the methods are different across both articles, they will be presented separately.

3.1 Study design

The first article utilized a solely quantitative approach whereas the 2nd article utilized a mixed-methods approach with a sequential explanatory design (Ivankova et al., 2006). For the second article, quantitative data was first collected and analyzed, then qualitative data was collected and analyzed based on the quantitative results. The qualitative data was then used to explain the quantitative data.

3.1.1 Setting

The study was conducted across four large ED networks in Quebec, Canada. These networks include university health regions and care for approximately 2 million inhabitants, or a quarter of the Quebec population.

3.1.2 Sample

The inclusion criteria for this study were patients 18 years or older with MD, including SRD, who utilized one of the previously mentioned ED within the past 12 months of patient recruitment. They also had to speak English or French and agree for the research team to access

their medical records. If in certain cases the participants were in psychosis crisis or too intoxicated, the interview was rescheduled at another time. As already mentioned, the first article included patients with a majority (61%) being high ED users, while in the second article all patients were high ED users, including a purposive sub-sample of 20 participants. The qualitative investigation of the 2nd article aimed to contrast high ED users without or with high unmet care needs. Therefore 10 participants without barriers to care, and 10 with 7 to 9 barriers to care were selected. The subsample participant selection also considered an equal distribution of patients across the four ED networks, as well as their sex and age, health conditions (e.g., with or without suicidal behaviors), and satisfaction with outpatient care to be reflective of the original sample of high ED users – the quantitate investigation.

3.1.3 Data collection

Patients recruitment was conducted between March 1, 2021, and May 13, 2022, in collaboration with the ED nurses working at each of the four aforementioned sites. The nurses used clinico-administrative data to identify patients meeting the inclusion criteria identified in the preceding section (3.1.2) to generate a list of 1751 ED users. They first contacted the patients to present the research project and invite them to participate. A script was used to recruit participants via telephone. Of the 563 patients who were randomly contacted by the nurses, 450 (80%) agreed to be referred to the research team. Subsequently, the research project coordinator contacted the potential participants by phone to provide all the details of the research, answer questions, and confirm their acceptance to participate in the project and obtain informed consent. The consent form was explained and sent by email upon request (as the interviews were done by phone, only verbal consent was required). The consent forms included information such as the nature of the project, the research objectives, the duration of study, and the right to withdraw at any time. Participants had to consent to the research team consulting their clinico-administrative data on their use of the CIUSSS/CISSS services; to the recording of the qualitative part of the interview; to the use of the collected data for secondary analyses; and to be contacted again for future research invitations if needed.

Subsequently, the coordinator would establish a time with the patient within the following days to conduct the standardized survey by phone, in English or French. The telephone

interview, which lasted an average of 45 minutes, allowed for the collection of self-reported data from the patients. Then, the participants were called by a member of the research team at the prearranged time. If the participant had a conflict, another appointment was scheduled for the following days. In the event that a participant did not respond, the coordinator was informed, and follow-ups were conducted until communication was established with the participant or until the end of the study. The survey was administered by trained interviewers and the survey was validated by a steering committee, including ED clinicians and staff who assisted with the research. The survey questionnaire and medical records in the network provided information on patient sociodemographic and clinical characteristics and their service use encompassing unmet care needs. Specifically, the survey and medical records collected data for the 12 months preceding patient interviews, except for chronic physical illnesses and chronic ED use measured for a total of 3 years (2 years previous the past 12 months).

The qualitative part of the survey averaged 15 minutes and focused on open-ended questions that provided a dynamic and flexible approach which allowed interviewers to modify the interview guide questions as needed to delve deeper or to follow leads on interesting aspects that had not been initially covered (Creswell & Poth, 2018). In particular, this section aimed to develop a deeper understanding of factors and reasons that contribute to unmet care needs among high ED users with MD. Techniques such as follow-ups, reminders, active listening, and clarification of statements were also used as needed during the interviews to enhance data validity and avoid confusion.

Interviews were conducted by phone and data was collected in an online interview software, LimeSurvey. The open-ended questions were read to the participants by a trained research team member, and their answers were recorded and transcribed verbatim in the following days directly onto a tablet or a computer. Individual interviews were conducted to mitigate potential biases such as stigma-related effects that might prevent patients from freely sharing their experiences. At the end, patients received a modest compensation of \$20, which was sent to them by mail once the interview was completed.

3.1.4 Databases and information sources based on medical records

Patient medical records from several databases were one of the information sources used for this study. Medical records provided service use (e.g., type, frequency) only within the ED networks and in public organizations (hospitals, community healthcare centers). Detailed descriptions of databases and information sources used for this thesis are found in Table 1.

The survey questionnaire completed the data extracted from medical records on service use outside the ED networks and in non-public services (e.g., community-based services: crisis centers). The survey also consisted of standardized scales and questions adapted from the CCHS (e.g., How do you see your 'physical' and 'mental health' conditions?). Since SRD are often underdiagnosed in medical records (Huỳnh et al., 2021), they were also measured using standardized scales, the Alcohol Use Disorders Test (AUDT) (Bohn et al., 1995) and the Drug Abuse Screening Test-20 (DAST) (Skinner, 1982) in the interview questionnaire.

Unique to this study, additional data on hospital outpatient services not centralized to the MSSS (or available at the *Institut de la statistique du Québec* (ISQ)) like the databases listed above was also analyzed and merged to the rest of the survey and administrative databases. Each time we encountered repeated information across databases and other instruments such as CLSC use in the past 12 months, which was found in both the I-CLSC and the survey, we integrated and merged the information by selecting the more elevated number of visits to ensure all visits were taken into consideration.

Database and Information	Description	
Sources		
Banque de données communes des urgences (BDCU) database (Gouvernement du Québec, 2024b)	 Medical records related to ED use (e.g., type, frequency, reason for ED use such as suicidal behaviors) Patient health diagnoses based on the International Classification of Diseases, Tenth Revision (ICD-10) (Appendix 1) 	
Système de maintenance et d'exploitation des données pour l'étude de la clientèle hospitalière (MED-ÉCHO) (Gouvernement du Québec, 2024c)	 Hospitalization patient data (e.g., type, frequency) Main and secondary causes of hospitalization (SRD, suicidal behaviors) Patient health diagnoses based on ICD-10 	
Outpatient hospital databases	• Information on specialized MD care provided by biopsychosocial teams (e.g., type, frequency, duration of all psychosocial resources, and treatment like assertive community treatment (ACT))	
Système d'information des centres locaux de services communautaires (I-CLSC) database (Gouvernement du Québec, 2024d)	• Psychosocial primary care mental health services dispensed in community healthcare centers (receiving psychosocial interventions in CLSCs)	

 Table 1: Description of databases and information source

3.2 Study Variables

3.2.1 Barriers to outpatient care

As mentioned in Chapter 2, barriers to outpatient care were examined as a proxy of unmet service needs. For this thesis, barriers to outpatient care were examined as structural and motivational barriers explaining unmet needs. For measuring unmet needs, patients were asked on a 5-point scale adapted from the CCHS if services provided outside of ED responded to their needs. If they answered between 1 (totally disagree) and 3 (somewhat agree), they were then asked to identify barriers to outpatient care, with 13 possible choices of structural barriers or motivational barriers. In the survey, 5 were motivational barriers and 8 were structural. Structural barriers included: 1) preferred to manage myself; 2) haven't gotten around to it (e.g., too busy); 3) didn't have confidence in the health care system 4) didn't have confidence in social services; 5) was afraid of what others would think of me, and motivational barriers included: 6) preferred to ask family or friends for help; 7) help not readily available; 8) job interfered (e. g., workload, work schedule, uncooperative supervisor); 9) could not afford to pay; insurance didn't cover 10) lack of transportation; 11) language barriers 12) don't know how or where to get this kind of help; 13) dissatisfied with the quality of services.

The number of barriers to outpatient care was logged for each patient. For the first article, barriers to care were categorized as 0 (no barriers to care), 1-2 (low barriers to care) and 3+ (high barriers to care), whereas the second article examined barriers to care across a continuum of 0-9 number of barriers to care.

3.2.2 Categorization and analysis of variables

In the article 1, the typology (or profiles of ED patients) were made including variables related to barriers to outpatient care and service use characteristics. Then these service use profiles were associated with sociodemographic and clinical characteristics as shown in Table 2. For article 2, mixed methods analysis was conducted to associate sociodemographic, clinical characteristics and service use characteristics to high barriers to care. For the second article, the dependent variable was the number of barriers to outpatient care and the independent variables were sociodemographic, clinical characteristics and service use variables shown in Table 2.

Table 2: Categorization, definition and source of sociodemographic, clinical and service use variables

Type of Variable	Variable	Definition of Variable	Source and Years (data extraction)
Sociodemographic variables	Sex	WomenMen	Survey (2021-2022)
Sociodemographic variables	Age group	Article 1 • 16-29 years • 30-49 years • 50+ years Article 2 • 18-49 years • 50+ years	BDCU (2020-2021)
Sociodemographic variables	Education level	Secondary or lessPost-secondary education	Survey (2021-2022)
Sociodemographic variables	Civil status	 Single (including separated, divorced or widowed) In a relationship 	Survey (2021-2022)
Sociodemographic variables	Employment status	Worker or studentSocial welfareRetired	Survey (2021-2022)
Sociodemographic variables	Household income (Can\$/year)	 0-\$19,999 \$20,000 - 39,000 \$40,000+ 	Survey (2021-2022)
Sociodemographic variables	Type of housing	 Private housing Rented housing Supervised housing¹ 	Survey (2021-2022)
Sociodemographic variables	Mental health stigma	• Stigma was measured on a 5-point scale with higher scores indicating less stigma, through the CCHS (2020) question: "Most people in	CCHS (2021-2022)
		 my community treat a person with MD, including SRD, in the same manner as they would treat any other person." High, Medium, Low 	
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Sociodemographic variables	Quality of life	 Quality of life was assessed on a 7-point scale using the Satisfaction with Life Domains Scale, which comprises of 20 items organized in 5 domains (e.g., daily living and social relationships), with higher scores indicating higher quality of life (Baker & Intagliata, 1982). 	Survey (2021-2022)
Clinical characteristics	Principal MD	 Serious MD (schizophrenia spectrum and other psychotic disorders; bipolar disorders), personality disorders Common MD (anxiety, depressive disorders; attention deficit/hyperactivity disorder) 	BDCU (2020-2021)
Clinical characteristics	SRD Co-occurring MD-SRD	 SRD integrated alcohol and drug-related disorders (Bohn et al., 1995; Skinner, 1982) 	BDCU, MED-ÉCHO (2020-2021) and Alcohol Use Disorders Identification Test (AUDIT) and the Drug Abuse Screening Test-20 (DAST) from survey (2021-2022)
Clinical characteristics	Suicidal behaviors (suicide attempt or ideation)	• Suicide attempt or ideation	BDCU (2020-2021)

Clinical characteristics	Perceived physical/mental health conditions	 Based on two merged CCHS questions ("How do you see your 'physical' and 'mental health' conditions") Perceived physical/mental health conditions was measured on a 10-point scale, with 7+ indicating better perceived health conditions. 	CCHS (2021-2022)
Clinical characteristics	Chronic Physical Illnesses (CPI) MD-chronic physical illnesses	 Adapted version integrating both the Charlson and Elixhauser Comorbidity indexes (Simard et al., 2018) Severity levels ranged from 0–3+, with higher scores indicating higher comorbidity 	BDCU and MED-ÉCHO and survey (AUDIT and DAST)
Clinical characteristics	Article 2 Co-occurring SRD/ CPI Article 2 Co-occurring MD/SRD/CPI	 SRD integrated alcohol and drug-related disorders Adapted version integrating both the Charlson and Elixhauser Comorbidity indexes (Simard et al., 2018) 	BDCU and MED-ÉCHO and survey (AUDIT and DAST)
Clinical characteristics	Article 2 Violent/disturbed behaviors or social problems		Provided by ED nurses as information collected in the BDCU (2020-2021)
Clinical characteristics	Percentage of high priority in ED triage	• ED triage priority was based on the Canadian Triage Acuity Scale which consists of 5 priority levels or illness severity, with levels 4-5 considered treatable in outpatient care (Canadian Association of Emergency Physicians, 2012).	Provided by ED nurses as information collected in the BDCU (2020-2021)

		• ED use with high triage priority (1-3) was considered a proxy for functional disability, based on the mean number of ED visits per patient with 1-3 triage priority divided by the total of ED visits per patient (1-5)	
Service use pattern	Knowledge of mental health or addiction services	 Knowledge of mental health or addiction services was measured on a 4-point scale, with ≤2 indicating poor knowledge 	CCHS (2021-2022)
Service use pattern	Article 2 Having a family doctor		BDCU (2020-2021) and survey adapted from CCHS (2021-2022)
Service use pattern	Article 1 Having a case manager		Hospital outpatient database (2020-2021)
Service use pattern	Number of consultations with GP	• Number of GP consultations included consultations with family doctors and walk-ins	Survey adapted from CCHS (2021-2022), I-CLSC, hospital outpatient database (2020-2021)
Service use pattern	Article 1 The number of primary care service use other than with GP	• Services provided by psychologists in private practice, community healthcare centers mainly dispensing psychosocial services, and community-based organizations (e.g., suicide prevention centers)	Survey adapted from CCHS (2021-2022), I-CLSC, hospital outpatient database (2020- 2021)

Service use pattern	Article 2 Number of private psychologist consultations (mean/SD)		Survey adapted from CCHS (2021-2022)
Service use pattern	Article 1 Number of specialized outpatient care	• Hospital psychiatric services integrating treatment from psychiatrists and their team, assertive community treatment and intensive case management programs, and services from addiction treatment centers	Hospital outpatient database (2020-2021) and Survey (adapted from CCHS) (2021-2022)
Service use pattern	Article 2 Consulting a psychiatrist		Hospital outpatient database and Survey adapted from CCHS (2021-2022)
Service use pattern	Article 2 Specialized outpatient care other than with psychiatrists	• Specialized outpatient care other than with psychiatrists included addiction treatment centers and hospital psychosocial resources	Hospital outpatient database (2020-2021) and Survey (adapted from CCHS) (2021-2022)
Service use pattern	Article 2 Receiving psychosocial interventions in community healthcare centers		I-CLSC (2020-2021) and Survey adapted from CCHS (2021-2022)
Service use pattern	Satisfaction with outpatient services	• Mean score of patient satisfaction with each of the outpatient service they used, evaluated on a 5-point scale, with higher scores indicating greater satisfaction	Survey adapted from CCHS (2021-2022)

Service use pattern	Article 1 ED use Article 2 Very high ED	 Low ED users (1-3 visits/year) High ED users (4+ visits/year) Very high ED users (8+ ED visits/year) (Chang et al., 2014; Buhumaid et al., 2015) 	Survey adapted from CCHS (2021-2022) and BDCU (2020-2021)
Service use pattern	Article 1 Number of recurrent ED users Article 2 Chronic high ED use	 8+ ED visits over the preceding 13-36 months (Krieg et al., 2016). 	Survey adapted from CCHS (2021-2022) and BDCU (2020-2021)
Service use pattern	High hospitalization	• High hospitalization was defined as being hospitalized 3+ times/year (Morlino et al., 2011)	MED-ÉCHO (2020-2021)

¹Supervised housing included group homes, residential care, supported apartments, etc.

3.3 Analysis

For the quantitative investigations in both articles, STATA 17 (Statacorp, 2015) was used for data analysis. The quantitative data (sociodemographic, clinical and service use characteristics) were first screened for missing values, univariate outliers, and normality assumptions (skewness and kurtosis). Missing data (<1%) were replaced by mode for categorical variables, and mean for continuous variables. Percentages were also calculated for categorical variables, and mean with standard deviations for continuous variables.

For the first article, cluster analysis was performed to develop a typology of ED users. Cluster analysis was chosen over latent class analysis since latent class analysis can be considered a 'large sample' method and performed less often on smaller samples such as ours (Sinha et al., 2021). Contrary to regression analysis, cluster analysis allowed for the creation of subgroups of individuals correlated with clinical and socio-demographic variables and patterns of service use. Several k-means cluster algorithms were used to classify and divide the set of data into homogeneous classes (Alsabti, 1997). The goal of clustering was to group the most similar

data together and separate the different data. In other words, we needed the similarities between patients' characteristics of the same cluster to be maximized and the similarities between patients' characteristics in different clusters to be minimized (Ben Ali, 2013). The most popular metric used to measure similarity and dissimilarity for mixed-type variables is Gower's dissimilarity coefficient (Gower, 1971). The Gower's dissimilarity coefficient was used because it allowed for missing values and allowed the addition of user-defined weighting scheme to control for certain variables having a higher impact on the final model versus others (Ben Ali & Massmoudi, 2013). The three-group solution was chosen as it had the largest Calinski–Harabasz pseudo-F value (Everitt et al., 2011), which indicated that it was the most distinct compared to the other models (Ben Ali & Massmoudi, 2013). To determine statistical differences between the profiles, pairwise comparisons were conducted using chi-square tests or Fisher's exact tests for categorical variables, and T-tests or Wilcoxon rank-sum tests for continuous variables. Additionally, collinearity tests were also performed using variance inflation factor variables to rule out highly correlated variables and thus adopt robust final models.

The second article utilized a mixed methods approach with a sequential explanatory design, where quantitative data is collected and analyzed first, then qualitative data is collected and analyzed based on the quantitative results (Ivankova et al., 2006). Considering our outcome variable (number of barriers to care) are discrete counts, Poisson regression or negative binomial regression could technically be used. However, Poisson distribution assumes that the mean and variance are the same, which was not the case for our data. Since the distribution of the dependent variables were skewed and contained many no unmet care needs (or "0"), negative binomial analysis showed better goodness-of-fit than Poisson and zero-inflated models and was thus selected for multivariable regression (Ver Hoef & Boveng, 2007). Bivariate analyses were conducted based on a 95% confidence interval (CIs) and a p-value of <0.2. Akaike's Information Criterion (AIC) and Bayesian's Information Criterion (BIC) were used for the model selection (Akaike, 1987; Swar, 1978). Incidence rate ratios (IRRs) and 95% confidence intervals were calculated for the negative binomial models with log link and robust standard errors (Zou, 2004). When entering variables into the model, stepwise regression was the method chosen, which iteratively examined the statistical significance of each independent variable in a model, while

prioritizing more pertinent variables (as identified in our literature review) and assuring a mix of variables according to block (sociodemographic, clinical, service use).

For the qualitative component of the second article, thematic analysis (Braun and Clarke, 2006) was performed. The steps included (1) familiarization with the transcripts; (2) establishing initial codes and an analysis grid; (3) combining codes into themes; (4) reviewing themes and verbatims to ensure consistency and completeness of the analysis; (5) clearly presenting and describing themes, with relevant quotes; (6) linking and interpreting the data. The analysis grid was framed according to structural versus motivational barriers to care relating to the CCHS unmet care needs questions, emphasizing key differences between the 10 patients with no versus the 10 patients with high unmet care needs (Statistics Canada, 2020). The units of analysis were words, phrases, or statements from the verbatim transcripts. The initial steps of identifying, grouping, and refining the study codes involved a 90% inter-rater agreement procedure for 20% of the verbatim to minimize the impact of personal biases and assumptions. Lastly, data saturation was also reached, meaning no new themes emerged from subsequent analyses (Saunders et al., 2018).

3.3.1 Study rigor

The rigor of the thesis was strengthened by the participation of a research team closely working with me and having diversified expertise (which included ED clinicians, managers of the ED and a steering committee). This multidisciplinary team provided adequate training and close monitoring of the research agents who worked in the project, and the steering committee validated the instruments and assisted in the overall planning of the research project. The closed and open-ended questions of the survey questionnaire were also based on a literature review of high ED users and adapted from previous projects conducted by the research team on the general use of ED for mental health reasons. Additionally, before interviewing actual study participants, three high ED users tested the questions beforehand. To minimize miscommunication and enhance a common understanding of the terms used among participants, examples were also provided to participants, for example, for types of services outside of the ED: family doctor, CLSC, community services, private psychologist, etc. Moreover, as mentioned above, the qualitative analysis involved a 90% inter-rater agreement for 20% of the verbatim to minimize

the impact of personal biases and assumptions. Lastly, saturation of the data was reached (Saunders et al., 2018).

3.4 Ethics

The multisite research protocol for the mixed-methods study (CIHR 8400997) was first granted by the Douglas Mental Health University Institute Ethics Board on September 4, 2020, and has since undergone annual renewal of its ethical and scientific certificate, following Quebec regulations. All study processes also adhered to ethical standards of health, dignity, and respect for privacy (World Medical Association, 2022); all participants were able to give informed consent to participate in the study; participants had the right to withdraw from the study at any time; strategies such as the use of alphanumeric codes to identify participants were implemented to ensure their confidentiality; and the sharing of information was limited exclusively to research team members, including de-identified data.

Chapter 4- Results

This chapter presents the research findings by means of two scientific articles. Each article addressed one of the two specific objectives of this thesis: Article 1 focused on the first objective, identifying service use profiles based on the patients' perceived barriers to outpatient care and associating these profiles with their sociodemographic characteristics and clinical characteristics. The first article entitled, *"Profiles of Emergency Department Users with Psychiatric Disorders Related to Barriers to Outpatient Care"* was published in the journal, *International Journal of Environmental Research and Public Health* in February 2024. Article 2 focused on the second objective, assessing the associated patient characteristics and service use patterns in addition to the structural and motivational barriers to care that could explain high ED use among patients with MD. The second article entitled, *"Barriers to Care among High Emergency Department Users with Mental Disorders – A Mixed Methods Study,"* was submitted to an international high impact peer-reviewed journal in June 2024 and is currently under peer review.

Both articles used the data generated from the list of ED users with MD recruited from March 1, 2021, and May 13, 2022, from the same four ED networks in Quebec, Canada. A wide range of sociodemographic characteristics, clinical characteristics, service use pattern variables were collected from clinico-administrative databases and survey questionnaires. Data analyses were conducted differently in each article, according to the research objective being addressed. Several authors contributed to the production of the two articles:

I, **Tiffany Chen**, was first author for both articles, and contributed to the conceptualization, methodology, formal analysis of the second article, and writing of both original drafts.

Dr. Marie-Josée Fleury was responsible for overseeing the overall research project,

including data collection and revisions, and was the corresponding author for both articles.

Zhirong Cao provided the quantitative analysis for the first article and statistical support for the second article.

Dr. Francine Ferland contributed to the revisions for the first article.

Dr. Lambert Farand contributed to the revisions for the first article.

4.1 Article 1 – Profile Study

Profiles of Emergency Department Users with Psychiatric Disorders Related to Barriers to Outpatient Care

Tiffany Chen¹, Zhirong Cao², Francine Ferland³, Lambert Farand⁴, Marie-Josée Fleury^{1,2}

¹Department of Psychiatry, McGill University, Montreal, QC H3A 1A1, Canada. ² Douglas Hospital Research Centre, Douglas Mental Health University Institute, Montreal, QC H4H 1R3, Canada.

 ³ School of Social Work, Addiction Rehabilitation Centre, Laval University, National Capital University Integrated Health and Social Services Centre, Quebec City, QC G1V 0A6, Canada.
 ⁴ Department of Health Administration, Policy, and Evaluation, School of Public Health, University of Montreal, Montreal, QC H3N 1X9, Canada.

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Corresponding author:

Marie-Josée Fleury, Ph.D., Douglas Hospital Research Centre, Douglas Mental Health University Institute, 6875 LaSalle Blvd., Montreal, Quebec, H4H 1R3, Canada; Tel. 1-514-761-6131 ext. 4344; Fax: 1-514-762-3049; E-mail: <u>flemar@douglas.mcgill.ca</u>



Article

International Journal of Environmental Research and Public Health



Profiles of Emergency Department Users with Psychiatric Disorders Related to Barriers to Outpatient Care

Tiffany Chen¹, Zhirong Cao², Francine Ferland ³, Lambert Farand ⁴ and Marie-Josée Fleury ^{1,2,*}

- Department of Psychiatry, McGill University, Montreal, QC H3A 1A1, Canada; tiffany.chen2@mail.mcgill.ca
 Douglas Hospital Research Centre, Douglas Mental Health University Institute,
- Montreal, QC H4H 1R3, Canada; zhirong.cao@douglas.mcgill.ca School of Social Work, Addiction Rehabilitation Centre, Laval University, National Capital University
- School of Social Work, Addiction Renabilitation Centre, Laval University, National Capital Universit Integrated Health and Social Services Centre, Quebec City, QC G1V 0A6, Canada; francine.ferland.ciussscn@ssss.gouv.cc.a
- ⁴ Department of Health Administration, Policy, and Evaluation, School of Public Health, University of Montreal, Montreal, QC H3N 1X9, Canada; lambert.farand.umontreal@gmail.com
- Correspondence: flemar@douglas.mcgill.ca

Abstract: Emergency department (ED) overcrowding is a growing problem worldwide. High ED users have been historically targeted to reduce ED overcrowding and associated high costs. Patients with psychiatric disorders, including substance-related disorders (SRDs), are among the largest contributors to high ED use. Since EDs are meant for urgent cases, they are not an appropriate setting for treating recurrent patients or replacing outpatient care. Identifying ED user profiles in terms of perceived barriers to care, service use, and sociodemographic and clinical characteristics is crucial to reduce ED use and unmet needs. Data were extracted from medical records and a survey was conducted among 299 ED patients from 2021 to 2022 in large Quebec networks. Cluster algorithms and comparison tests identified three profiles. Profile 1 had the most patients without barriers to care, with case managers, and received the best primary care. Profile 2 reported moderate barriers to care and low primary care use, best quality of life, and more serious psychiatric disorders. Profile 3 had the most barriers to care, high ED users, and lower service satisfaction and perceived mental/health conditions. Our findings and recommendations inform decision-makers on evidence-based strategies to address the unmet needs of these vulnerable populations.

Keywords: mental health; psychiatric disorders; emergency departments; health services; barriers to care; needs assessment

1. Introduction

Emergency department (ED) overcrowding is a growing problem worldwide [1]. It has been associated with increased waiting times, morbidity and mortality, and decreased quality of care [1,2]. High ED users have historically been targeted to reduce ED overcrowding and associated high costs [3]. Patients with psychiatric disorders, including substance-related disorders (SRDs), are among the largest contributors to high ED use [4], which is usually defined as 4+ ED visits/year—a standard benchmark often used, especially in Canadian studies [4,5]. Across Canada, there is a rising trend in both the overall number of ED visits and visits linked to high ED users [5]. A Quebec study has shown that in 2014–2015, patients with psychiatric disorders used EDs almost twice as often as patients without psychiatric disorders, and 17% of them were high ED users who accounted for close to half of all ED use and hospitalizations [6]. High ED use may be an indicator of unmet needs, and since EDs are not an appropriate setting for treating recurrent patients or for replacing outpatient care, it is important to examine and address the unmet needs of these high ED users. A Canadian study found that approximately 20% of ED visits could be dealt with more efficiently in other settings [7]. However, ED users with psychiatric



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Copyright: © 2024 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https:// creativecommons.org/licenses/by/ 4.0/). **Abstract:** Emergency department (ED) overcrowding is a growing problem worldwide. High ED users have been historically targeted to reduce ED overcrowding and associated high costs. Patients with psychiatric disorders, including substance-related disorders (SRDs), are among the largest contributors to high ED use. Since EDs are meant for urgent cases, they are not an appropriate setting for treating recurrent patients or replacing outpatient care. Identifying ED user profiles in terms of perceived barriers to care, service use, and sociodemographic and clinical characteristics is crucial to reduce ED use and unmet needs. Data were extracted from medical records and a survey was conducted among 299 ED patients from 2021 to 2022 in large Quebec networks. Cluster algorithms and comparison tests identified three profiles. Profile 1 had the most patients without barriers to care, with case managers, and received the best primary care. Profile 2 reported moderate barriers to care and low primary care use, best quality of life, and more serious psychiatric disorders. Profile 3 had the most barriers to care, high ED users, and lower service satisfaction and perceived mental/health conditions. Our findings and recommendations inform decision-makers on evidence-based strategies to address the unmet needs of these vulnerable populations.

Keywords: barriers to care; emergency departments; health services; mental health; needs assessment; psychiatric disorders.

1. Introduction

Emergency department (ED) overcrowding is a growing problem worldwide [1]. It has been associated with increased waiting times, morbidity and mortality, and decreased quality of care [1,2]. High ED users have historically been targeted to reduce ED overcrowding and associated high costs [3]. Patients with psychiatric disorders, including substance-related disorders (SRDs), are among the largest contributors to high ED use [4], which is usually defined as 4+ ED visits/year—a standard benchmark often used, especially in Canadian studies [4,5]. Across Canada, there is a rising trend in both the overall number of ED visits and visits linked to high ED users [5]. A Quebec study has shown that in 2014–2015, patients with psychiatric disorders used EDs almost twice as often as patients without psychiatric disorders, and 17% of them were high ED users who accounted for close to half of all ED use and hospitalizations [6]. High ED use may be an indicator of unmet needs, and since EDs are not an appropriate setting for treating

recurrent patients or for replacing outpatient care, it is important to examine and address the unmet needs of these high ED users. A Canadian study found that approximately 20% of ED visits could be dealt with more efficiently in other settings [7]. However, ED users with psychiatric disorders, including high ED users, are a heterogeneous group that features distinct patient profiles, which suggests that personalized care should be adapted to these patients' needs. Identifying outpatient service use profiles of patients with psychiatric disorders who use EDs, and integrating barriers to care that explain unmet needs, may thus be key to improving mental health services for these patients and reducing ED use.

Several studies that have assessed determinants of unmet service needs among patients with psychiatric disorders have found that unmet needs were associated with being female [8,9,10], being younger [8], having severe or evolving symptoms [11], or having co-occurring psychiatric disorders or SRDs [10,12,13], and poor physical health [9]. Research in this area has also identified potential barriers to care that explain unmet service needs. Most studies reported motivational or attitudinal barriers [8,9,14,15,16,17,18,19,20,21], while a few reported structural barriers [11,22] as the major reasons underlying perceived unmet needs among adults with psychiatric disorders. Yet, no typology has linked profiles of barriers to care explaining unmet service needs among ED users with psychiatric disorders. The typologies pertaining to ED users with psychiatric disorders have mostly focused on the socio-demographic and clinical characteristics of high ED users, mostly finding them to be young, single, male, and with medical comorbidities, but few typology studies have examined patient service use patterns [23,24]. One recent Canadian study that identified three profiles regarding the quality of outpatient care use for patients with SRDs found that the profile with the most frequent ED use and hospitalizations was made up of high outpatient service users mostly affected by psychiatric disorders and personality disorders [25]. Another study identified three profiles of moderate ED users with psychiatric disorders: one composed of young males with SRDs who were low outpatient service users; one of middle-aged females with common psychiatric disorders; and one of older patients with co-occurring psychiatric disorders-chronic physical illnesses. Patients in these last two profiles mainly consulted general practitioners (GPs). Also identified in that study was a fourth profile of high ED users with multiple psychiatric disorders-SRDs using

mostly specialized services [26]. Other studies found that the number of GPs consulted, higher hospitalization and specialized service use were associated with high ED user profiles [24,27].

This study is original in that it considers the number of barriers to care in relation to overall service use patterns among patients with psychiatric disorders, which may explain their psychiatric ED use and inform clinicians and policymakers on how to better respond to the unmet needs of these vulnerable patients and avoid repeated ED use. Most studies have evaluated the presence or absence of unmet needs without examining the number of barriers to care [26,28]. Profiles of ED users in relation to barriers to care, primary care and specialized service use, and patient satisfaction with care have not yet been reported, though they may assist in tailoring more personalized treatment options. Few studies on ED use among patients with psychiatric disorders have integrated medical records from large service networks and patient surveys in order to assess comprehensive data linked to service use and the individual profiles of patients. Through cluster analysis, this study aimed to identify ED user profiles based on the patients' perceived barriers to outpatient care and service use and to associate these profiles with sociodemographic and clinical characteristics in order to better understand psychiatric ED use and recommend more targeted interventions.

2. Materials and Methods

2.1. Study Setting and Data Collection

This study was conducted in four ED networks in Quebec, Canada. Patients with a psychiatric disorder, including SRDs, who were 18+ years old were randomly recruited through a list of 1751 ED users identified by the networks' ED staff. Of the first 563 eligible patients that were reached, 450 (80%) agreed to be referred to the research team to participate in the study. The research coordinator then contacted them to have them complete a 45 min standardized survey by phone, in English or French. The survey questionnaire was validated by a steering committee, including ED clinicians who helped with the research, and it integrated standardized questions from known and published surveys and standardized scales. The surveys were administered by trained interviewers between 1 March 2021 and 13 May 2022, and they were closely monitored by the research team. Participants also had to allow the research team to access their medical

records, which were merged with the survey results. The survey and medical records collected data for the 12 months preceding patient interviews, except for recurrent ED use, which was measured over the 2 years prior to this 12-month period. Medical records reported patient data related to ED use (BDCU databases), hospitalization or inpatient care (MED-ECHO databases), specialized psychiatric disorder care provided by biopsychosocial teams (outpatient hospital databases), and psychosocial primary care mental health services provided in community healthcare centers (I-CLSC databases). The BDCU and MED-ECHO databases provided patient health diagnoses based on the International Classification of Diseases, Tenth Revision (ICD-10) (Table S1). Each database included information on patient service use (e.g., type, frequency), but only within the ED networks and in public organizations (hospitals, community healthcare centers). The survey questionnaire completed the information extracted from the databases, namely service use outside the ED networks and in non-public services (e.g., community-based services: crisis centers). Patient profiles considered barriers to outpatient care related to unmet needs and other service use variables. Patient sociodemographic and clinical characteristics were then associated with these patient profiles. Participation in the study was voluntary. Patients who consented received a compensation of CAD \$20 for participating. Ethics approval was granted by the Douglas Mental Health University Institute ethics committee (IUSMD 20-26).

2.2. Study Variables

Variables considered for creating patient profiles specifically included the following: number of barriers to outpatient care, having a case manager, number of consultations with GP (0, 1–4, 5+), number of primary care service uses other than with GP (0, 1–4, 5+), number of specialized outpatient care uses (0, 1–4, 5+), satisfaction with outpatient services, high ED use, and high hospitalization, measured for the 12 previous months. Also included was the number of recurrent ED users, which was measured for the preceding 13–36 months. Barriers to outpatient care refers to health system features and individual characteristics or behaviors related to the patients' unmet needs, unmet needs being defined as "the difference between services judged necessary to appropriately deal with health problems, and services actually received" [29]. Based on a question used in the Canadian Community Health Survey (CCHS) [30], patients were asked on a 5-point scale if services provided outside of EDs responded to their needs. If they answered between 1 (totally disagree) and 3 (somewhat agree), they were then asked to identify barriers to

outpatient care, with 13 possible choices that could be associated with motivational barriers (e.g., "I prefer to manage by myself"; "have not gotten around to it (e.g., too busy)";) or structural barriers (e.g., "Help is not readily available"; "do not know how or where to get this kind of help"). The number of barriers to outpatient care was logged for each patient (0, 1-2, 3+). The variable "having a case manager" was also measured as it plays a key role in responding to patients with complex needs and helping them navigate the health and social services system [31]. Having a case manager has been proven to help patients reduce acute care [32,33,34]. The number of consultations with GPs included care provided by family doctors and GPs working in walk-in clinics. The number of primary care service uses other than with GPs referred to services provided by psychologists in private practice, community healthcare centers mainly dispensing psychosocial services, and community-based organizations (e.g., suicide prevention centers). The number of specialized outpatient care services included hospital psychiatric services integrating treatment from psychiatrists and their teams, assertive community treatment and intensive case management programs, and services from addiction treatment centers. Satisfaction with outpatient services represented the mean score of patient satisfaction with each of the outpatient services they used, evaluated on a 5-point scale, with higher scores indicating greater satisfaction. High ED use was defined as using EDs 4+ times/year. Patients in this study were categorized as low ED users (1-3 visits/year) or high ED users (4+ visits/year) [35,36]. Recurrent high ED users were categorized as 8+ visits over the preceding 13–36 months. High hospitalization was defined as being hospitalized 3+ times/year [37].

Sociodemographic characteristics were measured for the 12 months preceding interviews and included sex, age group (16–20, 30–49, 50+), civil status (single, in a relationship), stigma, and quality of life. Stigma was measured on a 5-point scale, with higher scores indicating less stigma, through the following CCHS question: "Most people in my community treat a person with a psychiatric disorder, including a SRD, in the same manner as they would treat any other person [30]." Quality of life was assessed on a 7-point scale using the Satisfaction with Life Domains Scale, which comprises 20 items organized in 5 domains (e.g., daily living and social relationships), with higher scores indicating higher quality of life [38].

Clinical characteristics were also measured for the preceding 12 months and included psychiatric disorders, suicidal behaviors (suicide attempt or ideation), perceived mental/physical health conditions, co-occurring psychiatric disorders-SRDs or psychiatric disorders-chronic physical illnesses, and percentage of high priority in ED triage. Psychiatric disorders included serious psychiatric disorders (schizophrenia spectrum and other psychotic disorders; bipolar disorders), personality disorders, and common psychiatric disorders (anxiety, depressive and adjustment disorders; attention-deficit/hyperactivity disorder). SRD included alcohol- and drug-related disorders (use, induced, intoxication, and withdrawal). In addition to medical records, the Alcohol Use Disorders Identification Test [39] and the Drug Abuse Screening Test-20 [40] were used to identify SRDs, as these disorders are often underdiagnosed in medical records [41]. Based on the merging of two CCHS questions ("How do you see your 'physical' and 'mental health' conditions"), perceived physical/mental health conditions were measured on a 10-point scale, with 7+ indicating better-perceived health conditions. Chronic physical illnesses were identified based on an adapted version integrating both the Charlson and Elixhauser Comorbidity indexes [42]. ED triage priority was based on the Canadian Triage Acuity Scale [43] which consists of 5 priority levels or illness severities, with levels 4–5 considered treatable in outpatient care. In this study, ED use with high triage priority (1-3) was considered a proxy for functional disability, based on the mean number of ED visits per patient with 1-3 triage priority divided by the total of ED visits per patient (1-5).

2.3. Analysis

Univariate analyses consisted of frequency distributions for categorical variables and mean values with standard deviations for continuous variables. Missing values (less than 1%) were randomly distributed and imputed by mean and mode. The k-means cluster algorithm with the Gower dissimilarity coefficient [44] was used to identify ED user profiles. Several k-means solutions with different numbers of profiles were computed for the cluster analysis to determine the optimal number of patient profiles. The three-profile solution had the largest Calinski–Harabasz pseudo-F value [45], indicating it was the most distinct result. To determine statistical differences between the profiles, pairwise comparisons were conducted using chi-square tests or Fisher's exact tests for categorical variables, and t-tests or Wilcoxon rank-sum tests for continuous variables. Analyses were performed with Stata 17.

3. Results

Of the 450 ED users referred by ED staff, 50 could not be reached and 300 participated, for a response rate of 75%. One patient withdrew, resulting in a final sample size of 299 patients. Most participants (55%) were women, 69% aged 30+ years, 82% single, 50% perceived high stigma, and the mean score for patient quality of life was 4.55 out of 7 (Table 1). Over half the participants (59%) had SRDs, 57% had common psychiatric disorders, 44% had serious psychiatric disorders, 42% had personality disorders, while 54% had suicidal behaviors, and 38% and 40% had co-occurring psychiatric disorders–SRDs or psychiatric disorders–chronic physical illnesses, respectively. Only 32% perceived having good physical/mental health conditions (score of 7+ out of 10), and 59% reported a high percentage of high triage priority (67–100%) for their ED use. Barriers to outpatient care were identified by 37% of patients, with 15% reporting 3+ barriers. Meanwhile, 58% had a case manager, 71% had consulted a GP, 58% had used 5+ primary care services other than GPs, and 38% reported using 5+ specialized outpatient services. While the mean score for satisfaction with outpatient services was 4.02 out of 5, 61% of the patients were high ED users, 40% were high recurrent ED users, and 21% had been hospitalized at least three times in the 12 months prior to their interview.

	N/mean	%/SD.
Sociodemographic characteristics (measured over the preceding 12 months) ^a		
Sex		
Women	165	55.18
Men	134	44.82
Age		
16-29 years	92	30.77
30-49 years	117	39.13
50+ years	90	30.10
Civil status		
Single (including separated, divorced or widowed)	246	82.27
In a relationship	53	17.73
Stigma		
High	149	49.83
Median	54	18.06
Low	96	32.11
Quality of life (mean/SD.)	4.55	1.06

Table 1. Characteristics of patients (N=299).

months)Serious psychiatric disorders13344.48Personality disorders12742.47Common psychiatric disorders16956.52Substance-related disorders (SRDs)17558.53Suicidal behaviors (suicide attempt or ideation)16153.85Good perceived mental/physical health conditions (7+)9531.77Co-occurring psychiatric disorders-SRD11337.79	Clinical characteristics (measured over the preceding 12		
Serious psychiatric disorders13344.48Personality disorders12742.47Common psychiatric disorders16956.52Substance-related disorders (SRDs)17558.53Suicidal behaviors (suicide attempt or ideation)16153.85Good perceived mental/physical health conditions (7+)9531.77Co-occurring psychiatric disorders-SRD11337.79	months)		
Personality disorders12742.47Common psychiatric disorders16956.52Substance-related disorders (SRDs)17558.53Suicidal behaviors (suicide attempt or ideation)16153.85Good perceived mental/physical health conditions (7+)9531.77Co-occurring psychiatric disorders-SRD11337.79	Serious psychiatric disorders	133	44.48
Common psychiatric disorders16956.52Substance-related disorders (SRDs)17558.53Suicidal behaviors (suicide attempt or ideation)16153.85Good perceived mental/physical health conditions (7+)9531.77Co-occurring psychiatric disorders-SRD11337.79	Personality disorders	127	42.47
Substance-related disorders (SRDs)17558.53Suicidal behaviors (suicide attempt or ideation)16153.85Good perceived mental/physical health conditions (7+)9531.77Co-occurring psychiatric disorders-SRD11337.79Co-occurring psychiatric disorders share is physical health conditions (7+)20.00	Common psychiatric disorders	169	56.52
Suicidal behaviors (suicide attempt or ideation)16153.85Good perceived mental/physical health conditions (7+)9531.77Co-occurring psychiatric disorders-SRD11337.79	Substance-related disorders (SRDs)	175	58.53
Good perceived mental/physical health conditions (7+)9531.77Co-occurring psychiatric disorders-SRD11337.79	Suicidal behaviors (suicide attempt or ideation)	161	53.85
Co-occurring psychiatric disorders-SRD 113 37.79	Good perceived mental/physical health conditions (7+)	95	31.77
Companying anothistaid discular characteristical illustrate b	Co-occurring psychiatric disorders-SRD	113	37.79
<u>Co-occurring psychiatric disorders-chronic physical linesses</u> 119 39.80	Co-occurring psychiatric disorders-chronic physical illnesses ^b	119	39.80
Percentage of high priority in emergency department (ED) triage (1, 2 and 3)	Percentage of high priority in emergency department (ED) triage (1, 2 and 3)		
0-33% 48 16.06	0-33%	48	16.06
34-66% 77 25.75	34-66%	77	25.75
67-100% 174 58.19	67-100%	174	58.19
Service use patterns (measured over the preceding 12 months, or other as specified)	Service use patterns (measured over the preceding 12 months, or other as spec	cified)	
Number of barriers to outpatient care	Number of barriers to outpatient care		
0 188 62.88	0	188	62.88
1-2 65 21.74	1-2	65	21.74
3+ 46 15.38	3+	46	15.38
Having a case manager17458.19	Having a case manager	174	58.19
Number of consultations with general practitioners (GP)	Number of consultations with general practitioners (GP)		
0 87 29.10	0	87	29.10
1-4 124 41.47	1-4	124	41.47
5+ 88 29.43	5+	88	29.43
Number of primary care service use other than GP	Number of primary care service use other than GP		
0 74 24.75	0	74	24.75
1-4 51 17.06	1-4	51	17.06
5+ 174 58.19	5+	174	58.19
Number of specialized outpatient care use	Number of specialized outpatient care use		
0 87 29.10	0	87	29.10
1-4 98 32.78	1-4	98	32.78
5+ 114 38.12	5+	114	38.12
Satisfaction with outpatient services (mean/SD.) 4.02 0.76	Satisfaction with outpatient services (mean/SD.)	4.02	0.76
High ED use (4+) 182 60.87	High ED use (4+)	182	60.87
Recurrent high ED users (8+) (measured over the preceding 13-36 months) 117 39.13	Recurrent high ED users (8+) (measured over the preceding 13-36 months)	117	39.13
High hospitalization (3+)6321.07	High hospitalization (3+)	63	21.07

^aAll variables are defined in the Methods section of the manuscript. For the list of diagnostics, refer to Table S1.

^b Chronic physical illnesses included: chronic pulmonary disease, cardiac arrhythmia, tumor with or without metastasis, renal disease, fluid electrolyte disorder, myocardial infarction, congestive heart failure, metastatic cancer, dementia, stroke, neurological disorder, liver disease, pulmonary circulation disorder, coagulopathy, weight loss, paralysis, AIDS/HIV.

3.1. Patient Profiles Related to Barriers to Outpatient Care and Service Use

Three patient profiles were identified (Table 2). Accounting for 50% of the sample, Profile 1 included the most patients without barriers to outpatient care (87%) compared to Profiles 2 (68%) and 3 (0%). This profile consisted of the most patients who had a case manager (71%) compared to Profiles 2 (41%) and 3 (51%), and it had the most patients (85%) with 5+ primary care service uses other than GPs per year, comparable to Profile 3 (75%) but much higher than Profile 2 (0%). Profile 1 also included fewer high ED users (58%) and recurrent high ED users (37%) than Profile 3 (87% and 57%, respectively). Profile 1 also reported the highest satisfaction with outpatient services (4.23/5), similar to Profile 2 (4.07/5) but significantly higher than Profile 3 (3.46/5). Profile 1 was labeled as follows: Patients with low barriers to outpatient care and high primary care service use, with most having a case manager.

Table 2. Patient profiles using emergency department (ED) based on barriers to care and service use (N=299)

	Profile 1*	Profile 2*	Profile 3*
Group size: N (%)	148 (49.83%)	87 (29.10%)	63 (21.07%)
	%/mean	%/mean	%/mean
Service use (measured over the preceding 12 month	ns, or other as specif	ied) ^a	
Number of barriers to outpatient care			
0	86.58 ^{2,3}	67.82 ^{1,3}	0.00 ^{1,2}
1-2	13.42	19.54	44.44
3+	0.00	12.64	55.56
Having a case manager	71.14 ^{2,3}	41.38 ¹	50.79 ¹
Number of consultations with general practitioners	(GP)		
0	17.45 ²	56.321,3	19.05 ²
1-4	45.64	37.93	36.51
5+	36.91	5.75	44.44
Number of primary care service use other than with	GP		
0	0.00 ^{2,3}	82.76 ^{1,3}	3.17 ^{1,2}
1-4	14.77	17.24	22.22
5+	85.23	0.00	74.61
Number of specialized outpatient care use			
0	25.51	34.48	30.16
1-4	32.21	35.63	30.16
5+	42.28	29.89	39.68

$4.23 (0.62)^3$	$4.07 (0.80)^3$	$3.46(0.74)^{1,2}$
57.72 ³	47.13 ³	87.301,2
36.91 ³	29.89 ³	57.14 ^{1,2}
18.12	21.84	26.98
	4.23 (0.62) ³ 57.72 ³ 36.91 ³ 18.12	4.23 (0.62) ³ 4.07 (0.80) ³ 57.72 ³ 47.13 ³ 36.91 ³ 29.89 ³ 18.12 21.84

^a All variables are defined in the Methods section of the manuscript. Superscript numbers indicate significant differences between profiles at p < 0.05. * Profile 1: Patients with low barriers to outpatient care and high primary care service use, with most having a case manager. * Profile 2: Patients with moderate barriers to outpatient care and low primary care service use. * Profile 3: Patients with high barriers to outpatient care and not satisfied with service use.

Accounting for 29% of the sample, Profile 2 had the fewest patients (41%) that were being followed by a case manager, a result comparable to Profile 3 (51%). More Profile 2 patients had not consulted a GP (56%) or used other primary care services (83%) than those in Profiles 1 (17%, 0%) and 3 (19%, 3%). Profile 2 had a lower number of high ED users (47%) than Profile 3 (87%) but was fairly comparable in that respect to Profile 1. Profile 2 also had a lower number of recurrent high ED users (30%) than Profile 3. Profile 2 was labeled as follows: Patients with moderate barriers to outpatient care and low primary care service use.

Accounting for 21% of the sample, all Profile 3 patients (100%) reported barriers to outpatient care, with a higher percentage of them (56%) experiencing 1–2 or 3+ barriers than in other profiles (13% and 0%, respectively, in Profile 1; 32% and 13% in Profile 2). With 44% of patients reporting 5+ consultations a year with GPs, Profile 3 was the highest in that regard, followed relatively closely by Profile 1. Profile 3 patients reported the lowest satisfaction with outpatient services (3.46/5) compared to Profiles 1 (4.23/5) and 2 (4.07/5). Profile 3 also had the highest number of high ED users (87%). Compared to Profiles 1 (37%) and 2 (30%), Profile 3 also had the greatest number of recurrent high ED users (57%). Profile 3 was labeled as follows: Patients with high barriers to outpatient care and high service use, including high and recurrent high ED use, and not satisfied with service use.

3.2. Associations between Patient Profiles and Covariates

Fewer patients in Profile 1 perceived high mental health stigma (46%) than those in Profile 3, and they had less serious psychiatric disorders (39%) but more common psychiatric disorders (60%) and suicidal behaviors (57%) than Profile 2 (Table 3). More Profile 1 patients (32%)

perceived good physical/mental health conditions than in Profile 3. Their quality-of-life score (4.54/7) was higher than that of Profile 3 but lower than Profile 2. Profile 1 also had fewer patients with low ED triage priority (12%) compared to Profile 2 (26%). Profile 2 included fewer women (45%) and fewer patients with personality disorders (32%) and co-occurring psychiatric disorders–chronic physical illnesses (29%), and more of them perceived good physical/mental health conditions (43%) compared to Profile 3. Profile 2 also reported fewer common psychiatric disorders (45%) and suicidal behaviors (39%), and more ED users with lower triage priority (26%) and a better quality of life (4.83/7) than the other two profiles; however, Profile 2 had more patients with serious psychiatric disorders (56%) than Profile 1. Profile 3 included more women (63%), personality disorders (63%), common psychiatric disorders (63%), suicidal behaviors (67%), and co-occurring psychiatric disorders–SRDs and physical illnesses (54%), but fewer ED users with lower triage priority (11%) than Profile 2. More Profile 3 patients perceived high stigma (65%) compared to Profile 1, and fewer of them perceived good physical/mental conditions (16%) and high quality of life (4.83/7) than in other profiles.

	Profile 1*	Profile 2*	Profile 3*	
Group size: N (%)	148 (49.83%)	87 (29.10%)	63 (21.07%)	
	%/mean	%/mean	%/mean	
Sociodemographic characteristics (measured over the	e preceding 12 mor	nths) ^a		
Sex				
Women	57.72	44.83 ³	63.49 ²	
Men	42.28	55.17	36.51	
Age				
16-29 years	26.85	33.33	36.51	
30-49 years	38.26	40.23	39.68	
50+ years	34.89	26.44	23.81	
Civil status				
Single (including separated, divorced or widowed)	81.21	79.31	88.89	
In a relationship	18.79	20.69	11.11	
Stigma				
High (1-2 scores)	45.64 ³	45.98	65.08 ¹	
Median (3 score)	19.46	18.39	14.29	
Low (4-5 scores)	34.90	35.63	20.63	
Clinical characteristics (measured over the preceding 12 months)				
Serious psychiatric disorders	38.93 ²	56.32 ¹	41.27	

 Table 3. Associations between patient profiles and covariates (N=299)

Personality disorders	39.60	32.18 ³	63.49 ²
Common psychiatric disorders	60.40^{2}	44.83 ^{1,3}	63.49 ²
Substance-related disorders (SRDs)	53.69	65.52	60.32
Suicidal behaviors (suicide attempt or ideation)	57.05 ²	39.08 ^{1,3}	66.67 ²
Good perceived mental/physical health conditions			
_(7+/ maximum 10) °	32.21 ³	42.53 ³	15.87 ^{1,2}
Co-occurring psychiatric disorders-SRD	36.24	39.08	39.68
Co-occurring psychiatric disorders-chronic physical			
_illnesses ^b	40.27	28.74 ³	53.97 ²
Percentage of high priority in emergency department (ED)		
triage (1, 2 and 3/out of 5)	,		
0-33%	12.08^{2}	26.44 ^{1,3}	11.11 ²
34-66%	27.52	19.54	30.16
67-100%	60.40	54.02	58.73
Quality of life (mean/SD., maximum 7)	$454(094)^{2,3}$	$4 83 (1 14)^{1,3}$	$4 19 (1 11)^{1,2}$

^{1,2,3} Superscript numbers indicate significant differences between profiles at p < 0.05.^a All variables are defined in Section 2 of the manuscript. For the list of diagnostics, refer to Table S1.^b See footnote ^b in Table 1. * See * Profiles footnotes in Table 2.

4. Discussion

Three profiles of patients with different barriers to care and service use among ED users were identified. Out of 299 patients, barriers to outpatient care explaining unmet needs were identified by 37% of patients who use EDs. This percentage is similar to that found in studies on unmet needs among patients with psychiatric disorders (27%) [46] but lower than among patients with SRDs (82%) [47] and the homeless (89%) [48]—though it is higher than the percentage in the general population (22%) [49]. The fact that 61% of study patients were high ED users and 40% were recurrent high ED users might explain their high number of perceived barriers to care. Loneliness, elevated perceived stigmatization and health issues might also explain unmet needs, even if the majority of our study patients had made substantial use of outpatient services and had a case manager.

It is interesting to note that 87% of Profile 1 patients, who accounted for half of our sample, reported no barriers to outpatient care. This could easily be explained by their high use of primary care services and the fact that over two-thirds of them had a case manager. Profile 1 had the most patients with 5+ primary care service uses per year other than GPs. Having a regular source of care and receiving biopsychosocial services were both previously associated with fewer unmet needs [50,51]. Case management is known to be successful in helping patients

access outpatient services that adequately respond to their needs [52]. Comparable to Profile 3, Profile 1 patients mostly had common psychiatric disorders, which explains their high primary care use. Primary care settings often serve as the first and only point of contact for individuals experiencing common psychiatric disorders [53]. More patients in Profile 1 perceived having good physical/mental health conditions and quality of life than those in Profile 3, with fewer reporting high stigma. This may explain the low number of barriers to care reported by Profile 1 patients. According to the literature, fewer unmet needs or barriers to care were associated with higher self-rated health and quality of life [52]. To reduce the ED use of Profile 1 patients, better access to primary care and care coordination could be improved. Previous studies have shown that continuity of primary care, such as better access to after-hours primary care, may reduce non-urgent ED utilization [53,54]. Collaborative care management has also been shown to improve outcomes for patients with common psychiatric disorders and help lower ED visits and other acute care use [55,56].

Accounting for one-fifth of the sample, Profile 3 had the most barriers to outpatient care despite their high service use. Compared to Profile 1, fewer of them reported having a case manager or using primary care services other than GPs; they also showed the highest number of high ED and recurrent high ED users and reported the least satisfaction with services compared to Profiles 1 and 2. These service patterns may easily explain the higher number of barriers to outpatient care seen in Profile 3. High and recurrent high ED use were previously found to be linked to insufficient or inadequate outpatient care [57]. The fact that patients who were less satisfied with service use reported more barriers to care was not surprising, as satisfaction with care is a key patient outcome [58]. Profiles with more service use (1 and 3) also included more women, who are known to use mental health services more readily than men [59,60]. Though Profiles 3 and 1 shared very similar sociodemographic and clinical characteristics, Profile 3 patients perceived their mental/physical health conditions and quality of life as the worst of the three profiles, and they felt more stigmatized than those in Profile 1. Profile 3 also had more patients with personality disorders and suicidal behaviors than Profile 2. The associations between poorer patient perception of their conditions and greater unmet needs [61], and the fact that patients with personality disorders have higher ED use and are less satisfied with outpatient services, are all well documented [62]. As the ED is often used for addressing crisis situations

[63], finding that these patients had more barriers to care due to greater suicidal behaviors and higher triage priority was not astonishing, especially since it has previously been reported in the literature [64,65]. To reduce high ED use among Profile 3 patients, ACT might be delivered to them or dialectical behavioral therapy (DBT) made available to those with personality disorders. ACT is a program offered to adults with severe psychiatric disorders requiring very intensive services. Each patient is treated by an interdisciplinary healthcare team that offers specialized services at the treatment intensity each patient needs [66]. The literature has strong overall evidence for reducing acute care use in patients who received ACT when compared to usual care [67]. DBT, an evidence-based psychotherapy approach, has also been recommended as a first-line treatment for the prevention of suicidal behaviors and psychiatric ED use in diverse clinical populations, including those with personality disorders and high-risk and acutely suicidal clients [68,69].

One-third of Profile 2 patients experienced moderate barriers to outpatient care. Of all the profiles, Profile 2 showed the lowest use of primary care services, but its high ED use and elevated satisfaction with care were similar to Profile 1. Over half of the Profile 2 patients were men; they had the highest percentage of serious psychiatric disorders but the lowest ED triage priority, the least suicidal behaviors, and the highest quality of life. Previous literature has shown that men are less likely than women to seek mental health treatments, or that they will seek help only as a last resort [70]. This lack of help-seeking behavior has been associated with traditional masculine norms such as being strong and self-reliant, and men may therefore inadvertently downplay potentially serious medical or mental conditions. This is underscored by the fact that the men in Profile 2 were the majority and had the highest percentage of serious psychiatric disorders but were still triaged at lower priority [71]. Their high ED use with lower triage priority could also be explained by the fact that patients with serious psychiatric disorders are reported to receive less primary care than patients with common psychiatric disorders [72]. Primary care providers, most notably GPs, are said to be less comfortable in treating patients with serious psychiatric disorders [73]. In line with the recovery movement, patients with serious psychiatric disorders can lead a good life despite their chronic illness as they often carry fewer expectations, especially if they receive the help they need [74]. Indeed, studies have shown that patients with serious psychiatric disorders usually demonstrate better quality of life compared to

those with common psychiatric disorders [74]. Of all the profiles, Profile 2 patients reported the best quality of life and perceived mental/physical conditions, along with the least high ED triage priority, all of which may explain why they perceived moderate barriers to care. ED use may be reduced for Profile 2 patients by providing them with more intensive case management (ICM), including better access to primary care. ICM is a community-based package of care aiming to provide long-term care for people with serious psychiatric disorders who do not require immediate admission. Intensive case management has been previously documented as an effective means of reducing ED use by high ED users [75]. Additionally, a few studies have evaluated the effects of enhanced primary care on the ED use of patients with serious psychiatric disorders and found that enhanced primary care reduced ED utilization over time [76].

This study has a few limitations. First, even though we used the unmet needs and barriers-to-care questions found in the CCHS, unmet needs were not measured with a standardized scale and were self-reported. Second, the number of barriers to care was examined, but we did not investigate types of care (e.g., information, counseling, medication) or types of barriers to care (motivational vs. structural). Moreover, as in all survey studies, it is subject to participation bias and the subjectivity associated with "perceived" barriers to care. Lastly, patients were recruited from large urban psychiatric ED networks in a public healthcare system, so study findings may not be generalizable to other types of EDs, territories, or contexts.

5. Conclusions

To our knowledge, this study was the first to identify profiles of ED users in terms of their perceived barriers to outpatient care, service use, and associated sociodemographic and clinical characteristics. Three profiles were found. Comprising half of the sample, Profile 1 had the most patients without barriers to outpatient care or unmet needs, receiving the best primary care services, with a majority of them having a case manager. Representing a third of the sample, Profile 2 reported moderate barriers to outpatient care and low primary care service use; it included more patients with serious psychiatric disorders and who reported the best quality of life. Accounting for one-fifth of the sample, Profile 3 had the most barriers to outpatient care and the greatest percentages of high and recurrent high ED users; these patients were the least satisfied with services and reported the worst perceived mental/health conditions and quality of

life. For Profiles 1 and 2, collaborative and integrative care models may better support primary care providers in treating people with common and serious psychiatric disorders. Moreover, the greater availability of family physicians and case managers may improve the overall responsiveness of primary and ambulatory services to offer better care alternatives than ED use for urgent mental health conditions. Strategies such as ACT, integrated co-occurring treatment, and shared care between psychiatrists and primary care services may also be implemented to improve the adequacy of care for patients like those in Profile 3, who have complex clinical conditions.

Supplementary Materials

The following supporting information can be downloaded at https://www.mdpi.com/article/10.3390/ijerph21020234/s1, Table S1: Codes for psychiatric disorders including substance-related disorders and chronic physical illnesses according to the International Classification of Diseases, Tenth revision.

Author Contributions

T.C.: conceptualization, formal analysis, writing of original draft; Z.C.: methodology, visualization, writing of original draft; F.F.: review and editing: L.F.: review and editing; M.-J.F.: funding acquisition, project administration, supervision, conceptualization, methodology, writing of original draft. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement

This study was conducted in accordance with the Declaration of Helsinki and approved by the Douglas Mental Health University Institute ethics committee (IUSMD 20-26).

Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

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Data Availability Statement

In accordance with the applicable ethics regulations in the province of Quebec, the authors do not have permission to share the data extracted from databases used for this study.

Conflicts of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Table S1. Codes for psychiatric disorders including substance-related disorders and chronic physical illnesses according to the

Diagnoses	International Classification of Diseases, Tenth Revision, Canada (ICD-10-CA)
Psychiatric disorders ^a	
Serious Psychiatric disorders	
Schizophrenia spectrum and other psychotic	F20* (schizophrenic disorders); F22* (persistent delusional disorders); F23 (acute and transient psychotic disorders);
disorders	F24* (induced delusional disorder); F25* (schizoaffective disorders); F28* (other psychotic disorder not due to a
	substance or known physiological condition); F29* (unspecified psychosis not due to a substance or known
	physiological condition); F448 (other dissociative and conversion disorders); F481 (depersonalization - derealization
	syndrome)
Bipolar disorders	F300-F302, F308, F309 (manic episode); F310-F317, F318, 319 (bipolar episode)
Personality disorders	F600 (paranoid personality disorder); F61 (mixed and other personality disorders); F340 (cyclothymic disorder); F341
	(dysthymic disorder); F601 (schizoid personality); F603 (borderline personality disorder); F605 (obsessive-compulsive
	personality disorder); F604 (histrionic personality disorder); F607 (dependent personality disorder); F602 (antisocial
	personality disorder); F609 (unspecified personality disorder); F21 (schizotypal personality); F606 (avoidant personality
	disorder); F608 (other specified personality disorders); F681 (factitious disorder); F688 (other specified disorders of
	adult personality and behaviour); F69 (unspecified disorder of adult personality and behaviour)
Common Psychiatric disorders	
Depressive disorders	F320- F323 (major depressive disorder, single episode); F328 (other depressive episodes); F329 (depressive episode,
	unspecified); F330-F334 (major depressive disorder, recurrent); F338 (other recurrent depressive disorders); F339
	(recurrent depressive disorder, unspecified); F348 (other persistent mood [affective] disorders); F380, F381 (persistent
	mood [affective] disorder, unspecified); F388 (other specified mood [affective] disorders); F39 (unspecified mood
	[affective] disorders); F412* (mixed anxiety and depressive disorder)*
Anxiety disorders	F40 (phobic anxiety disorders); F41(other anxiety disorders); F42 (obsessive-compulsive disorder); F45 (somatoform
	disorders); F48 (other neurotic disorders); F93, F94 (disturbance of emotions specific to childhood and adolescence)
Adjustment disorders	F430 (acute stress reaction); F431 (post-traumatic stress disorder); F432 (adjustment disorders); F438 (other reactions to
	severe stress); F439 (reaction to severe stress, unspecified)

International Classification of Diseases, Tenth revision

Attention deficit/hyperactivity disorder	F900; F901; F908; F909 (attention deficit/hyperactivity disorder)
Suicide attempt ^{a, b}	X60-Y09, Y870, Y871, Y35-Y36, Y890, Y891
Substance-related disorders ^a	
Alcohol-related disorders	F101*, F102* (alcohol abuse or dependence); F103, F104* (alcohol withdrawal); F105-F109, K700*-K704*, K709*,
	G621*, I426, K292*, K852, K860, E244, G312, G721, O354 (alcohol-induced disorders); F100*, T510, T511*, T518,
	T519 (alcohol intoxication)
Cannabis-related disorder	F121, F122 (cannabis abuse or dependence); F123-F129 (cannabis-induced disorders); F120, T407 (cannabis
	intoxication)
Drug-related disorders other than cannabis	F111, F131, F141, F151, F161, F181, F191, F112, F132, F142, F152, F162, F182, F192 (drug abuse or dependence);
	F113-F114, F133-F134, F143-F144, F153-F154, F163-F164, F183-F184, F193-F194 (drug withdrawal) F115-F119,
	F135-F139, F145-F149, F155-F159, F165-F169, F185-F189, F195-F199 (drug-induced disorders); F110, F130, F140,
	F150, F160, F180, F190, T400-T406, T408, T409, T423, T424, T426, T427, T435, T436, T438, T439, T509, T528,
	T529 (drug intoxication)
Chronic physical illnesses ^{a,c}	
Renal failure	1120, 1131, N18, N19, N250, Z49, Z940, Z992
Cerebrovascular illnesses	G45, G46, I60-I69
Neurological illnesses	G10-G12, G13, G20, G21-G22, G254, G255, G312, G318, G319, G32, G35, G36, G37, G40, G41, G931, G934, R470,
	R56
Endocrine illnesses (hypothyroidism; fluid	E00, E01, E02, E03, E890; E222, E86, E87; E66
electrolyte disorders and obesity)	
Any tumor with or without metastasis (solid	C00–C26, C30–C34, C37–C41, C43, C45-C58, C60–C76, C77-C79, C80; C81-C85, C88, C900, C902, C96
tumor without metastasis; lymphoma)	
Chronic pulmonary illnesses	1278, 1279, J40-J47, J60-J64, J65, J66, J67, J684, J701, J703
Diabetes complicated and uncomplicated	E102-E108, E112-E118, E132-E138, E142-E148; E100, E101, E109, E110, E111, E119, E130, E131, E139, E140, E141,
	E149

1099, 1110, 1130, 1132, 1255, 1420, 1425–1429, 143, 150, P290; 1441–1443, 1456, 1459, 147–149, R000, R001, R008, T821,
Z450, Z950; A520, I70-I72, I730, I731, I738, I739, I771, I790, K551, K558, K559, Z958, Z959; I05–I08, I091, I098,
134–139, Q230–Q233, Q238, Q239, Z952, Z953, Z954I210-I214, I219, I220, I221, I228, I229, I252; I101, I100, I11,
11500, 11501, 11510, 11511, 11521, 11581, 11590, 11591, 1674; 126, 127, 1280, 1288, 1289
D500; K257, K259, K267, K269, K277, K279, K287, K289; B20-B24; D65–D68, D691, D693-D696; B18, I85, I864,
1982, K700- K703, K709 K711, K713–K715, K716, K717, K721, K729, K73, K74, K754, K760, K761, K763, K764,
K765, K766, K768, K769, Z944; L900, L940, L941, L943, M05, M06, M08, M120, M123, M30, M31, M32–M35,
M45, M460, M461, M468, M469; G041, G114, G80, G81, G82, G83; E40–E46, R634, R64, D51–D53, D63, D649;
D501, D508; D509

^a The Canadian Tenth Revision (ICD-10-CA) was used in MED-ECHO (*Maintenance et exploitation des données pour l'étude de la clientèle hospitalière*, hospitalization database) and in BDCU (*Banque de données communes des urgences*, emergency department (ED) database). Diagnoses related to the two databases were considered, and all data were integrated each year, for each patient. MED-ECHO includes several diagnoses: primary diagnosis and numerous secondary diagnoses. For the databases used in this study, psychiatric disorders were considered as primary diagnoses only, but substance-related disorders (SRD) as both primary and secondary diagnoses, considering that SRD are often underdiagnosed. ^b Diagnostic codes for suicide attempt were registered in the MED-ECHO database. ED use for reasons of suicide ideation or attempt were reported by triage nurses in ED and registered in the BDCU database (and in the survey questionnaire). As they are not diagnostic codes, they were not reported in this table. ^c The list of chronic physical illnesses is based on an adapted and validated version of the Elixhauser Comorbidity Index, integrating the Charlson Index, which consists of 32 major categories of physical illnesses (see reference in the Methods section). For this list of chronic physical illnesses, three categories of psychiatric disorders and two categories of SRD (identified with an asterisk [*]) were also included under psychiatric disorders-SRD, thus appearing twice.

4.2 Article 2 – Mixed Methods Study

Barriers to Care among High Emergency Department Users with Mental Disorders – A Mixed Methods Study

Tiffany Chen¹, Marie-Josée Fleury, PhD^{1,2}

1 Department of Psychiatry, McGill University Douglas Mental Health University Institute Research Centre Montreal, Quebec, Canada,

2 Douglas Mental Health University Institute Research Centre Montreal, Quebec, Canada,

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Corresponding Author:

Marie-Josée Fleury, PhD, Douglas Mental Health University Institute, 6875 LaSalle Boulevard, Montreal (QC), Canada H4H 1R3. Email: flemar@douglas.mcgill.ca https://orcid.org/0000-0002-4743-8611

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Abstract

Purpose: The increasing number of high emergency department (ED) users is a growing concern worldwide. Patients with mental disorders (MD) are among the largest contributors to high ED use. As high ED use is often seen as an indicator of a healthcare system's shortcomings, high ED users with MD may perceive unique barriers to care. Analyzing the associated patient characteristics and service use along with structural and motivational barriers to outpatient care use could help explain the high ED use among patients with MD, and help recommend more patient-centered interventions. Methods: Data were extracted from a 2021-2022 survey and medical records of 182 high ED users with MD in four large ED networks from Quebec (Canada), including open-ended questions administered to 20 of these patients. A mixed methods approach (multivariable regression, thematic analysis) identified variables associated with the number of unmet care needs, and structural and motivational barriers to care explaining high ED use. Results: The study partially confirmed its first hypothesis that patients with more health issues who were dissatisfied with services would have more barriers to care. The second hypothesis was also confirmed: structural barriers were more prevalent than motivational ones in relation to high ED use, and patients with high unmet needs had more care barriers than those with no unmet needs. Conclusions: Findings suggest services could be greatly improved to reduce high ED use, and that unmet needs should be investigated further to better address the care barriers of this vulnerable population.

Keywords: Unmet Needs; Mental Disorders; Emergency Departments; Mental Health Services; Barriers to Care; Quality of Care.

Introduction

Emergency departments (ED) serve a crucial role in the healthcare system by providing 24/7 access to care to patients with urgent medical needs [1]. Patients with mental disorders (MD), including substance-related disorders (SRD), are among the largest contributors to high ED use, which is usually defined as 4+ visits/year [2]. Canada has seen a 27% increase in the number of high ED visits for mental health reasons between 2017 and 2023 [3]. Studies from 2018 and 2019 found that high ED users with MD accounted for 38-49% of ED visits for mental health

reasons, while only making up 8-17% of all ED users [4,5]. Increased ED use is problematic as ED are not equipped to address psychosocial needs or provide long-term follow-up care [6]. Considering that high ED use is often seen as an indicator of public health burden that reflects a healthcare system's insufficient quality, high ED users with MD may perceive unique barriers to care. A better understanding of these barriers is required to address these patients' needs and to improve services so as to reduce their high ED use.

Though several quantitative studies have assessed determinants of unmet needs for care among patients with MD [7,8], few have examined these unmet needs in relation to high ED use [6,9]. Some qualitative studies that explored high ED use among patients with MD found that unmet care needs partly explained high ED use [10-12]. Previous quantitative investigations have found that, compared to patients with MD who have few or no needs, patients with unmet care needs were more likely to be women, younger, and have severe MD symptoms, co-occurring MD-SRD or poor physical health conditions [13,14]. A study found that unmet care needs correlated more closely with ED use when such use was related to a patient's management of their psychiatric symptoms (i.e., safety to self/others, substance use, psychological distress, medication), followed by basic (i.e., housing, food, money) and social needs (i.e., friends, community) [6]. Another mixed methods study found the following needs to be most associated with high ED use: needing to talk to someone, to get medication, to find relief from psychiatric symptoms or to be hospitalized [5]. A recent study found three profiles of ED users with MD, one of which included high ED users with the greatest barriers to care; these patients also reported the lowest service satisfaction and the poorest perceived mental/physical health conditions [9]. Other qualitative investigations reported a combination of structural and motivational care barriers that justified high ED use, with structural barriers being most prevalent [12]. The structural care barriers most often reported in relation to high ED use included the long wait times to access services and the lack of outpatient care continuity and adequacy [12,15]. The motivational barriers most often mentioned included: perceived stigma, wanting to self-manage care, and loss of confidence in outpatient services [16,17].

This study is original in that it assessed the number and types of care barriers, along with associated patient characteristics and service use patterns among high ED users with MD. A

better understanding of the high psychiatric ED use among this population may help recommend interventions that are more patient-centered. Past studies mostly compared patients with met or unmet care needs without considering the impact of barriers to care [14,18]. It seems crucial to determine whether all patients with high ED use have more perceived care barriers or unmet needs and, if it's not the case, to compare the reasons explaining high ED use in those patients. Few studies on ED use among patients with MD have integrated data from both medical records and a survey in order to assess care barriers. This mixed methods study investigated structural and motivational barriers to care that explain high ED use by comparing patients in relation to the care barriers they reported. We hypothesized that patients with more health issues who were dissatisfied with services would have more barriers to care, and that structural care barriers would be linked more closely to high ED use.

METHODOLOGY

Study design, sample, and data collection

This study utilized a mixed methods approach with a sequential explanatory design [19]. A survey questionnaire including open-ended questions and medical records provided patient sociodemographic and clinical characteristics as well as service use data, encompassing unmet needs. The study was conducted in four large ED networks in Quebec. Patients with MD (including SRD) aged 18 and over were randomly recruited through a list of 1,751 ED users identified by ED staff. Of the first 563 eligible patients who were reached, 450 (80%) agreed to participate and complete a 45-minute standardized survey by phone, in English or French. Only high ED users (4+ visits/year) were recruited, including a purposive subsample of 20 participants for the qualitative investigation. The survey was validated by a steering committee. The 30-minute quantitative survey focused on the patient characteristics and service use not found in medical records; the open-ended questions were aimed at gaining a deeper understanding of the factors and reasons contributing to unmet needs. The survey was administered between March 1st, 2021, and May 13th, 2022.

Medical databases reported patient data related to ED use (BDCU), hospitalization (MED-ECHO), specialized MD care provided by biopsychosocial teams (outpatient hospital), and psychosocial services dispensed in community healthcare centers (I-CLSC). The BDCU and

MED-ECHO databases attributed patient diagnoses based on the International Classification of Diseases (ICD-10) (Appendix 1). Medical records indicated service use (e.g., type, frequency) within the ED networks and in public organizations (hospitals, community healthcare centers). The survey questionnaire gave complementary data on service use outside the ED networks, including from non-public services (e.g., community-based services: crisis centers).

Regarding the qualitative investigation, the 20 participants were specifically selected to contrast high ED users who have high unmet care needs to those who don't. Ten participants had no barriers to care, and ten had between seven and nine barriers. Participant selection also considered ED network distribution, sex and age, health conditions and satisfaction with care. Most interviews were done by phone using LimeSurvey, recorded, then transcribed. The survey and medical records were used to collect data for the 12 months preceding each patient's interview, except for chronic physical illnesses and chronic ED use which were measured over a 2-year period. Participation was voluntary and patients received a modest compensation. Ethics approval was granted by a health organization (8400997).

Study variables and open-ended questions

The quantitative investigation tested the patient characteristics and services use data associated with higher numbers of care barriers – the dependent variable. The number of care barriers, whether structural or motivational, was accounted for each patient. Unmet care needs were defined as "the difference between services judged necessary to appropriately deal with health problems, and services actually received" [20]. Based on a question from the Canadian Community Health Survey [21], patients were asked to state on a 5-point scale whether the services provided outside ED responded to their needs. If their answer fell between 1 (totally disagree) and 3 (somewhat agree), they were asked to pinpoint their barriers to outpatient care among 13 possible choices, some associated with structural barriers (e.g., "Help is not readily available"), others with motivational ones (e.g., "I prefer to manage by myself") (see Table 1).

Independent sociodemographic, clinical, and service use variables were identified based on previous literature on MD and acute care [22, 23]. Sociodemographic patient characteristics included: sex at birth, age group, education level (e.g., post-secondary education), civil status (e.g., single), employment status (e.g., retired), household income (e.g., Can\$0-19,000), type of housing (e.g., supervised), mental health stigma, and quality of life. Mental health stigma was measured on a 5-point scale with this CCHS question: "Most people in my community treat a person with MD, including SRD, in the same manner as they would treat any other person." [21] Scores of 1-2 indicated high stigma and scores of 3-5, low stigma. Quality of life was assessed on a 7-point scale with the 20-item Satisfaction with Life Domains Scale, with higher scores indicating better conditions [24].

Clinical patient characteristics included: MD, suicidal behaviors (suicide attempt or ideation), perceived mental/physical health conditions, chronic physical illnesses and their severity, different combinations of co-occurring MD-SRD-chronic physical illnesses, violent/disturbed behaviors or social problems, and percentage of high priority in ED triage. MD included serious MD (schizophrenia spectrum and other psychotic disorders, bipolar disorders), personality disorders and common MD (anxiety, depressive and adjustment disorders; attention deficit/hyperactivity disorder). SRD integrated alcohol- and drug-related disorders (use, induced, intoxication and withdrawal). In addition to medical records, the Alcohol Use Disorders Identification Test [25] and Drug Abuse Screening Test-20 [26] were used to identify SRD, as these disorders are often underdiagnosed in medical records [27]. Perceived physical/mental health conditions were measured on a 10-point scale, merging two questions from the CCHS ("How do you see your 'physical' and 'mental health' conditions"); scores of <7 indicated poor perceived health. Chronic physical illnesses were identified based on an adapted Elixhauser and Charlson Comorbidity Index [28]. Severity levels ranged from 0-3+, with higher scores indicating higher comorbidity. Violent/disturbed behaviors were reported by nurses and documented in the ED database (BDCU). ED triage priority was assessed on a 5-level scale based on the Canadian Triage Acuity Scale [29], with levels 4 and 5 being considered treatable in outpatient care. In this study, ED use with high triage priority (1-3) was proxy for functional disability, based on the mean number of ED visits per patient with 1-3 triage priority, divided by the total number of ED visits per patient.

Patient service use included: knowledge of mental health or addiction services, having a family doctor, number of consultations with general practitioners (GP) or with psychologists in

private practice, psychosocial interventions in community healthcare centers, consulting a psychiatrist, specialized outpatient care use other than with psychiatrists, satisfaction with outpatient services, very high ED use, chronic high ED use, and high hospitalization. Knowledge of mental health or addiction services was measured on a 4-point scale, with ≤ 2 indicating poor knowledge. Number of GP consultations included consultations with family doctors and walk-ins. Most psychologists in Quebec work in private practice, so psychosocial services are mostly provided by community healthcare centers [30,31]. Specialized outpatient care other than with psychiatrists included addiction treatment centers and hospital psychosocial resources. Mean satisfaction with outpatient services was evaluated on a 5-point scale, with higher scores indicating greater satisfaction. Very high ED use was defined as 8+ ED visits/year [2, 32], while chronic high ED use was defined as 8+ visits over a 13 to 36-month period. High hospitalization was defined as using inpatient care 4+ times/year [33].

Open-ended questions in the semi-structured interviews included: "In a few words, for what reasons do you frequently come to the ED?", "Do you consult other services before coming to the ED, and why not?", "Regarding services you have received outside of the ED, what can be improved to reduce your ED use?", "Do you have any other comments concerning services outside of the ED, so that they better respond to your needs?"

Analysis

Missing data (<1%) from the quantitative investigation were replaced by mode for categorical variables, and mean for continuous variables. Percentages were computed for categorical variables, and mean values for continuous variables. Since distribution of the dependent variables was skewed and contained many instances of "no unmet care needs" (or "0"), count data models were chosen. Bivariate analyses was conducted based on a 95% confidence interval (CI) and a p-value of <0.2. Akaike's and Bayesian's Information Criterion were used for model selection [34,35]. Negative binomial analysis showed better goodness-of-fit than Poisson and zero-inflated models, and was thus selected for multivariable regression [36]. Incidence rate ratios (IRR) and 95% CI were calculated for the negative binomial models with log link and robust standard errors [37]. Quantitative analyses were performed with Stata 17 [38].

Subsample selection for the qualitative data was done using Fisher's exact test [39], so as to have comparable distributions between the pertinent patient variables. The thematic analysis [40] steps were: (1) data familiarization; (2) generating initial codes and analysis grid; (3) combining codes into themes; (4) reviewing themes for analysis consistency and completeness; (5) presenting themes clearly; (6) data interpretation. The analysis grid distinguished structural from motivational care barriers to emphasize the key differences between the two groups of patients [21]. Structural barriers refer to the quality of care received in terms of accessibility, continuity, adequacy and satisfaction with outpatient services, and to the patient's knowledge of available mental health and addiction services. Motivational care barriers included health-seeking behaviors, perceived mental health stigma, and patient profiles related to their social and health conditions. Several strategies were implemented to ensure data saturation and study rigor (e.g., diversified team expertise; adequate training of research agents; 90% inter-rater agreement procedure for 20% of the verbatim to minimize the impact of biases).

RESULTS

Sample description

Of the 450 patients referred to the research team, 80% (n=300) participated in the study. Out of those, one duplicate was removed for a final quantitative sample of 182 high ED users. According to Fisher's exact test, there were no significant differences between these high ED users and the 20-patient subgroup in terms of sex, age, or any of the pertinent variables that were tested. In the sample, 63% were women, mean age was 51, 85% were single, 51% on social welfare, 48% had a household income lower than CAN\$19,999, 51% perceived high stigma, and the mean score for quality of life was 4.47/7 (**Table 1**). The majority (62%) had SRD, 64% showed suicidal behaviors and 72% perceived poor physical/mental health conditions. Additionally, 18% had a poor knowledge of mental health or addiction services, 78% had a family doctor, 19% had consulted a psychiatrist, and mean score for satisfaction with outpatient services was 3.92/5 (**Table 2**). The number of reported care barriers ranged from 0 to 9, with 41% of patients having unmet needs (1 or 2 care barriers, about equally divided between the two); 45% had high unmet needs (3+ care barriers, with a few reporting >7 barriers); 25% perceived structural barriers only, 16% motivational barriers only, while 59% perceived both

types. All the patients in the qualitative subgroup who reported unmet needs perceived both types of care barriers: 20% reported experiencing the maximum number of barriers (n=9) while 80% reported 7 barriers, for a mean of 7.4 barriers.

Quantitative results

The bivariate analyses featured in **Tables 1 and 2** include variables significantly associated with higher numbers of care barriers. The multivariable model (**Table 3**) showed that compared to patients aged 18-49, those aged 50+ were 43% less likely to experience more care barriers. Perceiving high mental health stigma versus low stigma increased the risk of experiencing care barriers by 1.31-times. Compared to patients with no suicidal behaviors, those with these behaviors were 39% less likely to perceive having more care barriers. And compared to patients with good mental/physical health conditions, those who perceived poor conditions were 1.32-times more likely to experience more barriers to care. Patients with a poor knowledge of mental health or addiction services were 93% more likely to experience more care barriers. Conversely, for each unit of improvement in satisfaction with outpatient services, the risk of experiencing care barriers decreased by 43%.

Qualitative results: reasons explaining high ED use among patients with no or high care barriers

Structural barriers

The structural barriers most often reported were related to the accessibility, continuity and adequacy of mental healthcare; satisfaction with outpatient services and knowledge of mental health and addiction services came next, in that order (see **Table 4** for survey quotes). Patients from both groups (with no barriers or high barriers) mentioned difficulties accessing family doctors, psychiatrists, psychosocial help in community healthcare centers and psychologists in the private sector. The difficulty to access family doctors was mentioned more often by patients with unmet needs, while those with no unmet needs said it could take them several weeks to access public psychosocial services or psychologists. Both groups mentioned the lack of care continuity outside the ED. Patients with high unmet needs reported having more difficulty finding a regular care provider, especially at the frequency of follow-up care they required.

Those with no unmet needs felt they had achieved a satisfactory continuity of care, but only after several years of self-advocacy. Outpatient services like psychosocial help from community healthcare centers or crisis hotlines were often deemed unreliable in terms of care adequacy, which varied greatly depending on the staff's training and seniority. Patients were frequently referred to ED by doctors who lacked experience in managing crisis situations linked to psychosis, suicidal behavior or SRD. Patients with more unmet needs said the high turnover in primary care workers caused care inconsistency, weak therapeutic alliances, and hindered patients's progress towards recovery. Patients with met needs reported that services like crisis centers were helpful but still unable to adequately respond to patients in crisis, thus leading to high ED use. More patients with no unmet needs were satisfied with outpatient care compared to those with high unmet needs, who were mostly dissatisfied with services as they thought healthcare providers were less attentive, made false assumptions about their needs, only provided temporary solutions to deeper problems or didn't take them seriously enough. Patients with unmet needs noted they lacked knowledge regarding services and were not sure how to access them outside ED, which explained their high ED use and perceived high unmet needs. Conversely, patients with no unmet needs rarely mentioned being dissatisfied with outpatient services, except in the case of addiction treatment centers where services, though deemed excellent, did not resolve their addiction problem or abate their consumption. As a result, these patients showed recurrent high ED use due to intoxication or overdoses.

Motivational barriers

The motivational barriers that were reported most often concerned health-seeking behaviors, followed by perceived mental health stigma and patient profiles linked to social and health conditions. Regarding health-seeking behaviors, more patients with no unmet needs said they preferred to manage by themselves and lacked confidence in the health care system, whereas those with high unmet needs reported they "haven't gotten around to it" due to a lack of will and for fear of what others would think. Both groups perceived mental health stigma, though it was more prevalent in those with high unmet needs. The attitude of healthcare providers was a concern, with patients saying they often felt staff did not listen to them or believe them, assumed they were aggressive and required restraints, or treated them like a lost cause. Patient profiles,

and especially social issues, drew a contrast between the two groups. Patients with no unmet needs mentioned being affected by the loss of a loved one or lack of social support, whereas patients with high unmet needs evoked financial, housing and/or food difficulties, and conflicts with family members. Patients from both groups discussed health issues, pointing out that suicidal behaviors and poor perceived mental/physical health conditions brought them to the ED.

Discussion

This mixed methods study analyzed the associated patient characteristics, service use and structural and motivational barriers to outpatient care use that could explain high ED use among patients with MD. Compared to the Canadian general population, about 5 times more study patients showed suicidal behaviors (64% vs. 12%) [41], and 12 times more had poor perceived physical/mental health conditions (72% vs. 5.9%) [42]. As other studies on high ED users have shown [5,43], these patients are quite vulnerable, which implies their high ED use could be explained by unmet needs. However, although all of them are high ED users, in the CCHS survey only 41% mentioned having unmet needs and a surprising 59% reported no unmet needs. Most of the study patients who had unmet needs perceived both structural and motivational barriers or structural barriers only; over half perceived high mental health stigma, and almost 20% reported having little knowledge of mental health and addiction services. When assessed with open-ended questions, most patients with no unmet needs reported less care barriers than those with high unmet needs, but all were found to have barriers to care. This result may be due to the fact that, in the CCHS questionnaire, patients are asked about specific barriers. In a qualitative investigation, patients can deepen their thoughts and thus expose more care barriers. This suggests that more qualitative investigations are needed to explore unmet needs, bring a better understanding of barriers to care, and to curtail structural care barriers even when they arise in public healthcare systems.

This study partially confirmed its first hypothesis, that patients with more health issues who are dissatisfied with services would have more barriers to care. However, in the multivariable model, only poor perceived mental/physical health conditions were shown to increase barriers to care, while suicidal behaviors had the opposite effect. Other studies found poor perceived health to be one of the strongest predictors of unmet needs [44], which could be due to the fact that a person's perception of their health conditions is key in their evaluation of care quality, whether or not they have multiple illnesses or have recovered [45, 46]. That patients with suicidal behaviors have less unmet needs was an interesting find, as to our knowledge that particular point has never been studied before [47], patients with suicidal behaviors were found to have better access to care, rapid intervention and more adequate treatment. In the qualitative investigation, patients with suicidal behaviors said they felt healthcare providers understood them better and took their concerns more seriously. They also mentioned feeling less stigmatized and more satisfied with the outpatient services they received. They were often referred to ED nonetheless, as outpatient services were deemed not responsive enough to deal with crisis situations, self-harm or overdoses. This aligns with existing literature, where ED have been identified as one of the primary resources for suicide prevention [48,11]. This study has found dissatisfaction with care to be a major structural barrier to outpatient care, one also conducive to high ED use. This coincides with previous literature, as user dissatisfaction in healthcare often stems from delayed care or poor service quality, thereby acting as a powerful barrier to proper help-seeking and contributing to heightened ED use [49,50].

The second hypothesis, that structural barriers to care would explain high ED use more than motivational barriers, was also confirmed. Indeed, the group with high unmet needs had more care barriers than the one with no unmet needs. The fact that users with high unmet needs had more difficulty accessing family doctors may be explained by these doctors' reticence or inability to treat patients with more severe MD, as was found in other studies [51,52]. Although Quebec's mental health reforms were aimed at improving access to services, there are still long waiting lists for physical and psychosocial resources [53,54]. Patients with high unmet needs and intensity of care, as evidenced by the fact providers proved to be less attentive to the needs and long-term concerns of these patients. In this study as in others, structural barriers were often associated with the attitude of medical practitioners and to healthcare system features; these aspects impacted on the overall adequacy and continuity of services by delaying the help-seeking process and contributing to an increased risk of emergency situations and adverse events later on [55, 56]. It was not surprising to find that patients with high unmet needs were less satisfied with outpatient care: patient satisfaction is one of the best predictors of service quality, one found to

be strongly associated with service use and continuity of care, which are both considered influential in regards to treatment compliance and outcomes [57,58]. On the other hand, patients who had no unmet needs rarely mentioned dissatisfaction as an issue, except in the case of addiction treatment centers. This suggests that SRD are prevalent in that population subgroup. Structural barriers played a significant role in patients with SRD, as dissatifaction was more closely related to treatment processes and outcomes than to social conditions and symptom severity [59]. Here as in other studies, the patients' lack of knowledge regarding mental health and addiction services negatively impacted their ability to find and properly utilize services that were accessible – which was especially true for patients who had more barriers to care [60]. Other studies have found such knowledge to be associated with age and mental health stigma [61,62]. The fact that older patients (50+) face less barriers to care than younger adults could be due to the fact that the latter are more exposed to mental health stigma, have difficulty recognizing their symptoms and often prefer to self-manage their conditions. Overall, patients reported experiencing more social issues than health issues, which reinforces the assertion that social support is key in the reduction of unmet needs [63,64].

Limitations

This study has a few limitations. First, we used the CCHS questions that pertain to unmet needs but these questions were not measured with a standardized scale, and answers were self-reported by patients and thus subject to memory bias. Secondly, the various barriers to outpatient care identified cannot be considered as equivalent. Lastly, the mean age of the study sample was 50+ and patients were recruited from large urban psychiatric ED networks operating in a public healthcare system, therefore study findings may not be generalizable to other types of populations, ED or territories.

Conclusion

This study was the first mixed-methods investigation to analyze associated patient characteristics, service use and structural and motivational care barriers among high ED users with MD. The study partially confirmed its first hypothesis that patients with more health issues and who are dissatisfied with services would have more barriers to care. Tackling stigma, providing better crisis management training, improving therapeutic alliances between patient and

health provider, bolstering collaborative care and reducing the gaps between ED and outpatient services may thus be recommended to improve user experience in mental health services. Future research may also focus on trauma-informed approaches in outpatient services to improve patient-centered care for service users experiencing a mental health crisis. The study's second hypothesis was also confirmed: structural care barriers were more closely linked to high ED use than motivational ones, and patients with more unmet needs experienced more barriers to care than those who had no unmet needs. This suggests that the organizational aspects of outpatient care could be improved for patients with high unmet needs as for those who have none. Enhancing refferal protocols, deploying strategies to increase follow-up care after ED discharge, implementing care plans and case management programs would all contribute to break the cycles leading to high ED use. Lastly, more qualitative investigations focusing on unmet needs may be needed to better understand care barriers in vulnerable populations such as that of high ED users with MD.

Statements and Declarations

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethics Approval

Ethics approval was granted by Douglas Mental Health University Institute ethics committee (8400997).

Competing Interests and Funding

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Group				U	nmet Needs	Na
				(Number of I	barriers to care: 0-9) ^a
Size (N)		182	100			
		n/ mean	%/ SD	IRR	95% CI	n-value
Sociodemographi	c					
characteristics						
Women (ref.:						
men)		112	62.54	1.01	0.58-1.76	≥0.20
Age(ref.:18-49						
_years)	50+ years	51	28.02	0.60	0.33-1.11	< 0.20
Education level						
(ref.: secondary or	Post-secondary					
_less)	education	99	54.40	1.00	0.58-1.72	≥0.20
Civil status (ref.:						
single (including						
separated,						
divorced or	· · · · ·	• •				
widowed))	In a relationship	28	15.38	1.14	0.54-2.37	≥0.20
Employment	Social welfare	92	50.55	0.76	0.43-1.33	≥0.20
status (ref.:		10	0.00	0. (-	0.05.1.50	
worker or student)	Retired	18	9.89	0.65	0.25-1.73	
Household	\$20,000 -	<i>(</i> 1	22.50	0.60		
income	39,000	61	33.52	0.68	0.37-1.26	≥0.20
(Can)/year	¢ 40,000 l	24	10 (0	1 2 1	0 (() (0	
(ref.: 0-\$19,999)	<u>\$40,000+</u>	110	18.68	1.31	0.00-2.00	> 0 00
Type of housing	Kented nousing	110	60.44	0.91	0.44-1.86	<u>≥</u> 0.20
(ref.: private	Supervised	10	21.00	0.04	0.26.1.07	
nousing)	nousing	40	21.98	0.84	0.36-1.9/	

Table 1. Sociodemographic and clinical characteristics of patients using emergency department (ED) (N=182) (measured over the 12 months preceding interview, or other as specified)

High mental						
health stigma						
(ref.: low)		93	51.10	2.21	1.31-3.75	<0.20
Quality of life						
(mean/SD.)		4.47	1.10	0.81	0.63-1.05	< 0.20
Clinical characteristics						
Serious mental health diagnoses						
(MD)		74	40.66	1.17	0.68-2.02	≥0.20
Personality disorders		86	47.25	0.89	0.59-1.80	≥0.20
Common MD		91	50.00	1.03	0.60-1.76	≥0.20
Substance-related disorders (SR)	D)	113	62.09	0.97	0.56-1.68	≥0.20
Suicidal behaviors (suicide ideat	tion					
or attempt)		117	64.29	0.60	0.35-1.03	< 0.20
Poor perceived mental/physical						
health conditions (ref.: good)		131	71.98	2.59	1.38-4.86	<0.20
Comorbidity Index						
(severity of chronic						
physical illnesses – CPI)						
(ref.: 0-2) ^b	3+	22	12.09	0.42	0.17-1.04	< 0.20
Co-occurring MD/SRD		77	42.31	0.88	0.51-1.51	≥0.20
Co-occurring SRD/ CPI		20	10.99	0.30	0.11-0.83	< 0.20
Co-occurring MD/SRD/CPI		15	8.24	0.75	0.48-1.18	< 0.20
Violent/disturbed behaviors						
or social problems		40	21.98	0.85	0.44-1.63	≥0.20
Percentage of high priority 3	84-66%	51	28.02	1.64	0.70-3.85	≥0.20
in ED triage (ref.: $0-33\%$) $\overline{6}$	7-100%	102	56.04	1 32	0.61-2.89	

^a Barriers to outpatient care included: structural barriers (e.g., help not readily available; job interfered [e. g., workload, work schedule, uncooperative supervisor]; could not afford to pay, insurance didn't cover; language barriers; lack of transportation; don't know how or where to get this kind of help; dissatisfied with the quality of services) and motivational barriers (e.g., preferred to manage by myself; haven't gotten around to it [e.g., too busy]; didn't have confidence in the health care system or social services; was afraid of what others would think of me; preferred to ask family or friends for help).

^bCPI were diagnosed 2 years prior to index ED visit in 2014-15 (April 1 to March 31). Elixhauser Comorbidity Index included: chronic pulmonary illnesses, cardiac arrhythmias, tumor with or no metastasis, renal failure, fluid electrolyte illnesses, myocardial infarction,

congestive heart failure, metastatic cancer, dementia, cerebrovascular illnesses, neurological illnesses, liver illnesses (excluding alcohol-induced liver disease), pulmonary circulation illnesses, coagulopathy, weight loss, paralysis, AIDS/HIV. Of the 31 illnesses reported in this index, the 4 related to MD or SRD categories were excluded. This index was originally developed for mortality, and not for ED use or hospitalization, which may have impacted findings for this study.

Group			Uni	met Needs	
			(Number of b	arriers to care: 0-9)	
Size (N)	182	100			
	n/	%)			
	mean	SD	IRR	95% CI	p-value
Poor knowledge of					-
mental health or					
addiction services	32	17.58	1.94	1.00-3.76	< 0.20
Having a family doctor	142	78.02	1.02	0.53-1.95	>0.20
Number of					
consultations with					
general practitioners					
(GP) (mean/SD)	3.77	4.53	1.04	0.98-1.10	< 0.20
Number of private					
psychologist					
consultations					
(mean/SD)	4.36	12.47	1.01	0.99-1.03	< 0.20
Receiving					
psychosocial					
interventions in					
community healthcare					
centers	15	8.24	0.42	0.14-1.24	< 0.20
Consulting a					
psychiatrist	34	18.68	0.74	0.42-1.28	>0.20

Table 2. Service use of high emergency department (ED) users (N=182) (measured over the 12 months preceding interview, or other as specified)

Using specialized					
outpatient care other					
than psychiatrists	76	41.76	0.63	0.36-1.08	< 0.20
Satisfaction with					
outpatient service use					
(mean/SD.) ^a	3.92	0.79	0.48	0.33-0.72	< 0.20
Very high ED use					
(8+/year) (ref: no)	40	38.10	0.94	0.55-1.63	≥0.20
Chronic high ED use					
(within 2 years prior to					
the 12-month ED use)					
(ref.: no)	89	48.90	1.35	0.79-2.30	≥0.20
High hospitalization					
(4+/year)	28	15.38	1.21	0.58-2.51	≥0.20

^a Higher scores indicate greater or increased conditions or situations.

Table 3: Variables associated with number of unmet care needs or barriers to care among high emergency department (ED) users – Negative binomial regression

	Uı (Number of	nmet Needs barriers to care: 0-9)	
	IRR	95% CI	p-value
Sociodemographic			
characteristics			
Age (ref.: 18-49 years) 50+ years	0.57	0.32-1.00	0.049
High mental health			
stigma (ref.: low)	2.31	1.41-3.78	0.001
Clinical			
characteristics			
Suicidal behaviors			
(suicide ideation or			
attempt)	0.61	0.37-1.00	0.048

Poor perceived			
mental/physical health			
conditions (ref.: good)	2.32	1.26-4.26	0.007
Service use			
Poor knowledge of			
mental health or			
addiction services	1.93	1.07-3.49	0.029
Satisfaction with			
outpatient services			
(mean/SD.) ^a	0.57	0.45-0.89	0.009

^aHigher scores indicate greater or increased conditions or situations.

Table 4: Quotes from the 20-patient subgroup interviews aimed at structural and motivational barriers to care, comparing patients with no unmet care needs or barriers to care to those with unmet care needs and high barriers to care

Dimensions	No unmet needs or barriers to care	Unmet needs and high barriers to care
1. Structural barriers	"It takes weeks to see the family doctor. It was	"Access to the family doctor is not easy, access to
Accessibility of care	not accessible, due to these reasons I stopped	appointments is very long, you have to wait half an
	seeing my family doctor before going to the	hour on the phone with the secretary to get an
	ED."	appointment, there is a lack of accessibility for my
		family doctor."
	"The waiting time for psychologists is a big	
	problem. I was lucky getting my current	"I never see my psychiatrist. I don't see enough of
	psychologist, but before I had tried to contact 3-4	her for the needs I have. I haven't seen her in an
	psychologists, they all had 2-4 months wait lists,	entire year."
	it's unacceptable to wait during that critical	
	time."	"I am not very satisfied with the accessibility of the
		addiction treatment center. It either takes referrals or
	"In the evening when we call the crisis centers,	you have to call them, then often when I call them,
	the appointment is the next day. Because the	they take me to the hospital, because I don't have
		access to a bed."

	 appointment is the next day, I won't go because I can't wait." "I had one psychiatrist, but I wanted to see someone else because it wasn't working. They brought me back to the same psychiatrist. I was not doing well, I was in crisis so I went to the ED 3 times. The psychiatrist I had, and whom I 	"I feel like accessibility of the services in English is really tough. I feel like there should be enough places where English people would still be comfortable.
	didn't want anymore, still refuses to transfer my file." "When I called 811 the last times because I needed to know what I can do in such a situation, whether I should go to the ED or anything else, they don't answer anymore. It's like 811 is a number that doesn't serve anymore."	
Continuity of care	"I didn't have these services before, but I started a follow-up with intensive case management recently. I now have care monitoring in my daily life, which helps me function well, because I had a lot of difficulty functioning at home, alone."	"I really enjoy meetings with my psychologist [in community healthcare centers], but when you've had your 12 meetings, after that it's over. Then there's nothing more. Would appreciate continuation. It's good, but it doesn't last."
	"I now have better outpatient care monitoring. It however took me a long time before acceding community follow-up, it took me several years."	"There were vacation periods where I went almost a month without talking to my counselorThere was no replacement. They acted like I could take vacations from my addiction difficulties, from my need to receive services."
		"I've been asking for follow-up with a psychiatrist for the last 10 years to deal with my trauma. Do you know what she said? That I don't really need a psychiatrist and that she can't provide one to me."

		"There is lack of consistency with clinicians. Hard to form good connections with the workers who takes care of us since they only stay for a short period of time before they leave because they found another job. There is no consistency in the clinicians, which does not help us to continue our efforts towards good health."
Adequacy of care	 "Depends on who you get; on the hotline sometimes, you get someone that is on the phone that is really helpful and sometimes some people that are not very helpful." "Crisis centres helped me, but normally, when I feel like I have to go to the ED, there's nothing that helps me." "I like the crisis centres. But with the suicide prevention center, I find that they are too formal in their very standardized questions, I have the impression as soon as they read my file, they 	 "For crisis line, I have the impression that they don't know what to do with me, that I'm a lost cause They need better training and awareness of mental health. They need better listening, better sensitivity, more empathy. They always end up telling me to go to ED anyways." "I called friends and the community healthcare centers before going to the ED, the answers were not favorable and then it was difficult to contact someone competent there."
	make assumptions of what to do. They are not responsive enough."	
Satisfaction with outpatient services	"Personally, addiction treatment centre helped me Although the services were excellent, it didn't really help me to stop drinking. I know that this decision, to stop drinking, must come from me The services helped me, but it didn't solve the problem. But the services were great." "When the intervention plan didn't work because there was no improvement in my consumption	"My dissatisfaction comes from the fact that it took two hospitalizations over several months for my psychiatrist to believe meto understand that I needed help. That's why I can't be completely satisfied, and I can never be because I've had so many stupid things said to me up to now." "You know what they offer, they're really more temporary solutions or things like that It doesn't
	level, they terminated my services. After a	help to have a temporary accommodation and then

	 month, I can't call them back. I find it frustrating during the times that I need services more, even if I haven't been good lately, they terminate my services." "My satisfaction with the services I received, I rated 3/5 because some workers are nice, but some don't really know what to say when I talk to them." 	have no support for the real problems we have, [the problem] keeps coming back. It persists and we return to the ED." "Not enough time allocated to each patient, not enough listeningbad patient history. Need to be more attentive."
Knowledge of mental health and addiction services	 "I didn't consult other places before ED the first few times because I didn't know other help options. Now, yes. When I feel completely in control, I use the crisis center." "I only called Info-Suicide once, I didn't know it existed before. I thought it was just for cigarettes. I went to see, and they helped me right away." "I learned the important thingthat the AA [Alcohol Anonymous] movement is complementary to psychological and medical help. I have borderline personality disorder, I was hyperactive, and the psychiatrist told me he would give me medication. But it made me understand that they are all complementary to each other." 	"Lack of information on the government programs that are available for people who have mental disorders. I don't know who to contact for this." "I am new in Quebec, not sure what is covered by insurance, ED is for sureI am not informed of other options." "I never knew you could go to community healthcare centers for mental health reasons. I also didn't know crisis centres existed until recently. There is a lack of information of the programs that are available for people who have mental health problems. Lack of info means I stay in situation x and y. I don't know who to contact for this." "I don't know where I'm going anymore. I know where I would like to go, but I don't really know which door to take to get there. Because I'm like, how can I put it, I'm left to my own devices here all alone in my little corner, and I find it extremely difficult."

		"I think I don't have all the services I need. I don't know what exists, so I don't know. I feel lonely in this. I would like to know what services are accessible, which I could be entitled to." "I come for help and to know more about my mental disorder."
2. Motivational barriers <i>Health seeking behaviors</i>	"I went to addiction treatment center a few times, it helps, I started again, then I stopped then, I started again then, you're never satisfied there you know. You are not satisfied, this is not related to the services, it's me. It didn't provide any value for me. At one point, I asked myself the question, what do you want there, what do you want to get, what do you need? Then I realized, I don't even know the answer myself." "I had very good follow-up with the community healthcare center and addiction treatment center, they often called me to make appointments in the last few months, but I must say that it was me who chose not to continue. It's a personal choice, I told myself that I preferred to continue sending my stuff to my doctor at the hospital, I didn't think I needed care like that." "I don't like social workers. They insist I have to get involved in something, but I don't want to."	"Well, that's more me, I have to do it. I have to call [services outside of ED] when I need it before it's too late for me to vocalize my needs. It's more me who needs to improve there, it's not the system, it's up to me to adapt to the system then." It's not service dissatisfaction; the services are very good. It's more my self-confidence. I said it was scary having an intervenor who was too serious. If I have one, I'm sure it will work, but it scares me to disappoint him."
Mental health stigma	"The outpatient services at other hospitals I had good experiences, but at one location, I really didn't feel listened to, and I didn't feel understood. It wasn't fun at all."	"Nurses assume I am aggressive, making assumptions, jumping to conclusion. It is unpredictable how they treat you."

	"My family doctor had difficulty believing what I told him about my mental health symptoms, and I had to go to the ED to meet another doctor, a psychiatrist."	"I'm at the ED because I have a particular need, because no one wants to help me and because no one believes me. That's it, I wasn't taken seriously, in short. If they had taken me seriously the first time and given me the right care afterwards, I wouldn't have needed to return there."
		"I feel stigma when using suicide prevention centers. I think because of my diagnosis, which is BPD, [bipolar disorder]well it's stigmatizing, so it's not taken seriously, the suffering is not taken seriously enough."
Patient profiles Social issues: job loss; financial, housing or food difficulties; lack of support to develop autonomy; or crisis (e.g. death of a	"No, my mother died there, everything is over. I lost everything when my mother died there, it was 5 years ago, I lost everything you know." "I need to talk to someone. I need love, I need to talk about my emotions then, to be listened to	"I need more stability in my life. My father died, then we lost the house. There is no water anymore and I lacked basic resources, and now I am with big debts and my family is not rich. So, I was in ED because of the cost of living."
loved one, separation, conflict)	then, to be helped on this subject. That's what I miss, and that's what I need. I don't need to be put in a little locker in a bed with a little blanket. That's not what I want. I would like to talk to someone competent."	"They gave me medicine on time and gave me food. The group home is not addressing my needs, it lacks healthcare services, so I need to go seek them myself."
		"They often offer me the crisis center instead of hospitalizing me. Well, I don't go to the crisis center because my former partner, he's there, and I don't want to know anything about him. He already hit me. It's like that, so there aren't many alternatives other than that."
		"I am struggling with my mental health. I want to think that better support from family and friends

		would help me avoid escalating to the ED, but sometimes nothing ever feels enough."
Health issues: suicidal behavior, perceived mental and physical health	"What I appreciate most is that I feel that I am not judged and that they listen to me, that they respect the situation and that they are understanding [suicidal behaviors]."	"I specifically like crisis centers. I've got probably the best care from crisis center. They made me feel pretty at home and kind of welcome and not judged [suicidal behaviors]."
	"At the crisis center they listen more; they are there to help you. But during COVID, I tried to join the crisis center, then SOS suicide, all that, but I was unable because there were too many calls, and I was sent to ED anyways."	"I sometimes call an outpatient psychiatric clinic, but they direct me to the ED. They tell me if it's urgent [suicidal behaviors], well you'll have to go to the ED because it's in the ED that they can actually keep me in the psychiatry department, so I'll receive adequate care."
	"I realized there is no point in going to ED anymore. I stopped going there because I knew I wouldn't have any solution. The ED, their mandate is that if people are dying, they can help them on the spot. But if you're not necessarily dying, it may not be the right place to go for	"Sometimes, I call other services, but my reflex is to go to the ED when something is not going well, then I feel that I am more in control of what is happening in my head [suicidal behaviors]."
	chronic problems."	"No matter how much they do anything, no matter how much they give all the advice, we're going to go back the ED the same way."

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Appendix 1 Codes for mental disorders including substance-related disorders and chronic physical illnesses according to the International Classification of Diseases, Tenth revision

Diagnoses	International Classification of Diseases, Tenth Revision, Canada (ICD-10-CA)					
Mental disorders (MD) ^a						
Serious MD						
Schizophrenia spectrum and other psychotic disorders	F20* (schizophrenic disorders); F22* (persistent delusional disorders); F23 (acute and transient psychotic disorders); F24* (induced delusional disorder); F25* (schizoaffective disorders); F28* (other psychotic disorder not due to a substance or known physiological condition); F29* (unspecified psychosis not due to a substance or known physiological condition); F448 (other dissociative and conversion disorders); F481 (depersonalization - derealization syndrome)					
Bipolar disorders	F300-F302, F308, F309 (manic episode); F310-F317, F318, 319 (bipolar episode)					
Personality disorders	F600 (paranoid personality disorder); F61 (mixed and other personality disorders); F340 (cyclothymic disorder); F341 (dysthymic disorder); F601 (schizoid personality); F603 (borderline personality disorder); F605 (obsessive-compulsive personality disorder); F604 (histrionic personality disorder); F607 (dependent personality disorder); F602 (antisocial personality disorder); F609 (unspecified personality disorder); F21 (schizotypal personality); F606 (avoidant personality disorder); F608 (other specified personality disorder); F681 (factitious disorder); F688 (other specified disorders of adult personality and behaviour); F69 (unspecified disorder of adult personality and behaviour)					
Common MD						
Depressive disorders	F320- F323 (major depressive disorder, single episode); F328 (other depressive episodes); F329 (depressive episode, unspecified); F330-F334 (major depressive disorder, recurrent); F338 (other recurrent depressive disorders); F339 (recurrent depressive disorder, unspecified); F348 (other persistent mood [affective] disorders); F380, F381 (persistent mood [affective] disorders); F390 (unspecified mood [affective] disorders); F390 (unspecified mood [affective] disorders); F390 (unspecified mood [affective] disorders); F412* (mixed anxiety and depressive disorder)*					
Anxiety disorders	F40 (phobic anxiety disorders); F41(other anxiety disorders); F42 (obsessive-compulsive disorder); F45 (somat disorders); F48 (other neurotic disorders); F93, F94 (disturbance of emotions specific to childhood and adolesc					
Adjustment disorders	F430 (acute stress reaction); F431 (post-traumatic stress disorder); F432 (adjustment disorders); F438 (other reactions to severe stress); F439 (reaction to severe stress, unspecified)					
Attention deficit/hyperactivity disorder	F900; F901; F908; F909 (attention deficit/hyperactivity disorder)					
Suicide attempt ^{a, b}	X60-Y09, Y870, Y871, Y35-Y36, Y890, Y891					
Substance-related disorders ^a						
Alcohol-related disorders	F101*, F102* (alcohol abuse or dependence); F103, F104* (alcohol withdrawal); F105-F109, K700*-K704*, K709*, G621*, I426, K292*, K852, K860, E244, G312, G721, O354 (alcohol-induced disorders); F100*, T510, T511*, T518, T519 (alcohol intoxication)					
Cannabis-related disorder	F121, F122 (cannabis abuse or dependence); F123-F129 (cannabis-induced disorders); F120, T407 (cannabis intoxication)					

Drug-related disorders other than cannabis	F111, F131, F141, F151, F161, F181, F191, F112, F132, F142, F152, F162, F182, F192 (drug abuse or dependence); F113-F114, F133-F134, F143-F144, F153-F154, F163-F164, F183-F184, F193-F194 (drug withdrawal) F115-F119, F135-F139, F145-F149, F155-F159, F165-F169, F185-F189, F195-F199 (drug-induced disorders); F110, F130, F140, F150, F160, F180, F190, T400-T406, T408, T409, T423, T424, T426, T427, T435, T436, T438, T439, T509, T528, T529 (drug intoxication)
Chronic physical illnesses ^{a, c}	
Renal failure	I120, I131, N18, N19, N250, Z49, Z940, Z992
Cerebrovascular illnesses	G45, G46, I60-I69
Neurological illnesses	G10–G12, G13, G20, G21–G22, G254, G255, G312, G318, G319, G32, G35, G36, G37, G40, G41, G931, G934, R470, R56
Endocrine illnesses (hypothyroidism; fluid electrolyte disorders and obesity)	E00, E01, E02, E03, E890; E222, E86, E87; E66
Any tumor with or without metastasis (solid tumor without metastasis; lymphoma)	C00–C26, C30–C34, C37–C41, C43, C45-C58, C60–C76, C77-C79, C80; C81-C85, C88, C900, C902, C96
Chronic pulmonary illnesses	I278, I279, J40-J47, J60-J64, J65, J66, J67, J684, J701, J703
Diabetes complicated and uncomplicated	E102-E108, E112-E118, E132-E138, E142-E148; E100, E101, E109, E110, E111, E119, E130, E131, E139, E140, E141, E149
Cardiovascular illnesses (congestive heart failure; cardiac arrhythmias; valvular illnesses; peripheral vascular illnesses; myocardial infarction; hypertension and pulmonary circulation illnesses)	1099, 1110, 1130, 1132, 1255, 1420, 1425–1429, 143, 150, P290; 1441–1443, 1456, 1459, 147–149, R000, R001, R008, T821, Z450, Z950; A520, 170-172, 1730, 1731, 1738, 1739, 1771, 1790, K551, K558, K559, Z958, Z959; 105–108, 1091, 1098, 134–139, Q230–Q233, Q238, Q239, Z952, Z953, Z9541210-1214, 1219, 1220, 1221, 1228, 1229, 1252; 1101, 1100, 111, 11500, 11501, 11510, 11511, 11521, 11581, 11590, 11591, 1674; 126, 127, 1280, 1288, 1289
Other chronic physical illness categories (blood loss anemia; ulcer illnesses; liver illnesses; AIDS/HIV; rheumatoid arthritis/collagen vascular illnesses, coagulopathy; weight loss, paralysis; deficiency anemia)	D500; K257, K259, K267, K269, K277, K279, K287, K289; B20-B24; D65–D68, D691, D693-D696; B18, I85, I864, I982, K700- K703, K709 K711, K713–K715, K716, K717, K721, K729, K73, K74, K754, K760, K761, K763, K764, K765, K766, K768, K769, Z944; L900, L940, L941, L943, M05, M06, M08, M120, M123, M30, M31, M32–M35, M45, M460, M461, M468, M469; G041, G114, G80, G81, G82, G83; E40–E46, R634, R64, D51–D53, D63, D649; D501, D508; D509

^a The Canadian Tenth Revision (ICD-10-CA) was used in MED-ECHO (*Maintenance et exploitation des données pour l'étude de la clientèle hospitalière*, hospitalization database) and in BDCU (*Banque de données communes des urgences*, emergency department (ED) database). Diagnoses related to the two databases were considered, and all data were integrated each year, for each patient. MED-ECHO includes several diagnoses: primary diagnosis and numerous secondary diagnoses. For the databases used in this study, MD were considered as primary diagnoses only, but substance-related disorders (SRD) as both primary and secondary diagnoses, considering that SRD are often underdiagnosed. ^b Diagnostic codes for suicide attempt were registered in the MED-ECHO database. ED use for reasons of suicide ideation or attempt were reported by triage nurses in ED and registered in the BDCU database (and in the survey questionnaire). As they are not diagnostic codes, they were not reported in this table. ^c The list of chronic physical illnesses is based on an adapted and validated version of the Elixhauser Comorbidity Index, integrating the Charlson Index, which consists of 32 major categories of physical illnesses (see reference in the Methods section). For this list of chronic physical illnesses, three categories of MD and two categories of SRD (identified with an asterisk [*]) were also included under MD-SRD, thus appearing twice.

<u>Chapter 5 – Discussion</u>

This chapter has five sections. The first section provides a summary of the research and originality of this thesis. The second section presents an integrated discussion of key findings presented in Chapter 4, including both articles. The third section focuses on recommendations made for improving services based on the study findings. Finally, the last section concludes with study strengths, limitations and suggestions for future research directions.

5.1 Summary of the research

The main purpose of this thesis was to investigate unmet needs of ED users with MD and especially barriers to outpatient care of high ED users to better understand psychiatric ED use and recommend more targeted interventions to improve outpatient care. Both articles examined unmet needs and barriers to care among ED users with MD using different approaches. The first article performed a cluster analysis that allowed the identification of subgroups of individuals based on similar characteristics (Hattenschwiler et al., 2001). This type of analysis has been used previously both in population and clinical samples to identify typologies based on sociodemographic and health-related variables, service utilization, and levels of help received (Fleury et al., 2020; Charron et al., 2023; Moe et al., 2021; Perreault et al., 2016). The first article aimed to identify ED user profiles based on the patients' perceived barriers to outpatient care and service use. Identification of individual profiles was useful in determining which subgroups of ED users would likely perceive higher or lower barriers to care. By identifying the subgroups, we were also able to examine the quality of care they receive from outpatient service, with a particular focus on barriers to care and then associated these profiles with sociodemographic characteristics and clinical characteristics. The results from the first study found the subgroup that perceived the most barriers to care were mostly high ED users with lower service satisfaction and having worse perceived mental/health conditions.

Since high ED users also consisted of the majority of the sample in the first article (61%) and found to be the most important patients for whom we should improve services because of the high cost and vulnerability related to these patients, the second article focused on the subgroup of high ED users only. The second article utilized a mixed-methods approach to assess the associated patient characteristics and service use patterns in addition to the structural and

motivational barriers to care that could explain high ED use among patients with MD. The mixed methods approach used a sequential explanatory design (Ivankova et al., 2006) to complement the quantitative findings by contrasting high ED users with high unmet care needs against high ED users with no unmet needs. Descriptive analyses were produced for the quantitative data, while content analysis (Braun & Clarke, 2006) was performed on the qualitative data. When assessed with open-ended questions that probed for reasons for high ED use and perceived barriers to care, most patients with no unmet needs reported less care barriers than those with high unmet needs, but all were found to eventually have barriers to outpatient care. By incorporating the responses from open-ended questions aimed at gaining a deeper understanding of the factors and reasons contributing to met or unmet needs, high ED users with no unmet needs were given the opportunity to deepen their thoughts and thus expose more care barriers.

In summary, Article 1 identified three patient profiles using cluster analysis: Profile 1 had the lowest barriers to outpatient care and high primary care service use, with most having a case manager. Profile 2 reported moderate barriers to care and low primary care use, best quality of life and more serious MD. Profile 3 had the most barriers to care and high and recurrent ED users, and lower service satisfaction and perceived mental/health conditions (Table 3).

Article 2 partially confirmed its first hypothesis, that patients dissatisfied with services and with more health issues would have more barriers to care. From the qualitative results, overall patients with no unmet needs were more satisfied with outpatient care. Patients with high unmet needs found healthcare providers didn't take them seriously enough and were less attentive about their needs. Whereas patients with no unmet needs were rarely dissatisfied, except in the case of addiction treatment centers. Interestingly, in the multivariable model, only poor perceived mental/physical health conditions were shown to increase barriers to care, while suicidal behaviors had the opposite effect. The second hypothesis, that structural barriers explained high ED use more than motivational barriers, was also confirmed. Notably, patients with high unmet needs were found to perceive more barriers to care than those with no unmet needs, especially in terms of accessibility, continuity and adequacy of care. Outpatient services were often deemed unreliable, and patients were mostly referred to the ED due to doctors' inexperience with crises and care inconsistency. A summary of significant findings from Article 1 and 2 can be found in Table 3.

5.1.2 Originality

The originality of the cluster analysis performed in the first article resides in the inclusion of number of barriers to care and health service utilization variables, which expanded our knowledge concerning typologies of ED users with MD. Previously, little was known about the associations between barriers to outpatient care and distinct service use profiles of ED users with MD. While socio-demographic and clinical variables are often studied using cluster analysis, service utilization and mostly quality of care variables have rarely been studied (Gentil et al., 2021a). Few studies outside of this thesis have integrated service network medical records with patient surveys among ED users with MD to comprehensively assess data positively associated with service use profiles and types of barriers to care (Fleury et al., 2024). To our knowledge, this is also one of the first studies on profiles of high ED users with MD with a focus on barriers to care and unmet needs. The objective of the second article was also original as no studies have tried to comprehend if all patients with high ED use also perceived high barriers to care or at least have all unmet needs, and if not, how those patients may compare in justifying their high ED use. The second article was therefore innovative in the mixed-methods approach of identifying, comparing and contrasting structural and motivational barriers to care between high ED users with or without unmet needs. Overall, these two articles were among the first few published quantitative or mixed-method studies to explore the perceived barriers to care among ED users including high ED users with MD, and the first in the Quebec context, a healthcare system with its own specificities regarding mental health.

5.2 Integrated discussion of findings

5.2.1 Similarities and differences in the study sample

Our sample characteristics reflected similarities as well as differences with samples observed in previous research. The first article found 37% of the sample perceived unmet needs, which is similar to other studies on unmet needs among patients with MD (27%) (Statistics Canada,

2018), lower than individuals with SRD (82-85%) (Kosteniuk et al., 2022) or homeless individuals (66-89%) (Hyshka et al., 2017; Addorisio et al., 2022), but higher than those found in the Canadian general population (18-22%) (Statistics Canada, 2021; Statistics Canada, 2019). The heterogeneity of the sample in the first article and the complex social and health issues faced by high ED users and recurrent high ED users, which consisted of 61% and 40% of the sample respectively, may explain these percentage differences in unmet needs. On the other hand, the second article reported 41% of the sample having unmet needs. This percentage is slightly higher than other studies on unmet needs among patients with MD (27%), which could be explained by the entire sample consisting of high ED users. High ED users often experience complex vulnerabilities, including mental health and substance use challenges, and comorbid medical conditions (Wise-Harris et al., 2017; Vandyk et al. 2013), but have also been documented in the literature as perceiving high unmet service needs (Vandyk et al. 2013; Walker et al., 2021; Nesper et al., 2016).

Previously literature have always associated high ED users to have high unmet needs (Moe et al., 2022). This is notable however, as article 2 consisted of a high proportion of high ED users with no unmet needs, which affected over half of the sample (61%). Previous studies have explored factors or reasons related to inappropriate or non-urgent psychiatric ED use (Mowbray et al., 2019; Kirchner et al., 2023), but none to our knowledge have investigated high ED users with MD and found that a majority would have no unmet needs based on an unmet need questionnaire. Due to the lack of literature on patients with these characteristics, it is difficult to determine if inappropriate or non-urgent ED visits from patients with MD are equivalent or representative to high ED users with no unmet needs. Therefore, we speculate that the proportion of high ED users with no unmet needs may be overestimated in our study sample due to the potential methodology. A potential reason could be due to the fact that, in the CCHS unmet need questionnaire, patients were asked to choose from specific barriers to outpatient care (closed-ended questions), and only in the qualitative portion of the interview, were patients given the opportunity to deepen their thoughts and thus expose more care barriers to care (open-ended questions).

5.2.2 Number and types of barriers to care

Both articles also examined the number of barriers to outpatient care in slightly different ways. The first article categorically grouped the number of barriers to care as 0 (no barriers to care), 1-2 (low barriers to care) and 3+ (high barriers to care), whereas the second article examined barriers to care across a continuum of 0-9 number of barriers to care. Past studies have mostly compared patients with met or unmet care needs (yes/no response), and without considering the impact of barriers to care (Thoits et al., 2022; Rens et al., 2022; Sacre et al., 2022). Even fewer examined these barriers to care in relation to high ED use (Dezetter et al., 2015; Schmidt et al., 2018). Therefore, the methods used across both articles allowed for novel insight on how the degree of perceived barriers of care influenced service use among patients with MD. In the first article, 37% of the ED users perceived one or more barriers to care. This was more apparent in the second article that only focused on high ED users, where 41% of patients perceived at least one barrier to care, and 45% had high unmet needs, where very few reported 7+ barriers.

Notably, the first article also did not investigate the types of barriers to care. The second article therefore complemented the first, as the types of barriers to care (structural or motivational) were examined more in depth among high ED users with MD (Table 3). For the qualitative interviews in the second article, two groups of 10 were formed for comparison (no unmet needs vs. high unmet needs). Among these two groups, 25% perceived structural barriers only, 16% motivational barriers only, while 59% perceived both types. Similar to previous qualitative investigations examining barriers that justified high ED use, we also found structural barriers to care were more prevalent across the sample and would explain high ED use more than motivational barriers (Poremski et al., 2020). As mentioned in the second article, structural barriers most often reported were related to the accessibility, continuity and adequacy of mental healthcare, followed by satisfaction with outpatient services, then knowledge of mental health and addiction services. In this study as in others, structural barriers were often positively associated with the attitude of medical practitioners and to healthcare system features; which impacted the overall adequacy and continuity of services by delaying help-seeking and

contributing to an increased risk of emergency situations and adverse events later on (Castillejos et al., 2019). Additionally, patients with no unmet needs were more knowledgeable and more satisfied with outpatient care compared to those with high unmet needs. Interestingly, patients with no unmet needs rarely mentioned dissatisfaction, except in the case of addiction treatment centers, indicative of SRD in the subgroup. As found in previous barriers to care studies on patients with SRD, structural barriers such as dissatisfaction was more closely related to treatment processes and outcomes than to social conditions and symptom severity among this vulnerable population (Stallvik et al., 2019).

Moreover, we also found other motivational barriers uniquely related to high ED users with MD who have no unmet needs (Table 3). In the second article, the motivational barriers that were reported most often surrounded health-seeking behaviors, followed by perceived mental health stigma and then patient profiles linked to social and health conditions. Regarding health-seeking behaviors, more patients with no unmet needs said they preferred to manage by themselves and lacked confidence in the health care system, whereas those with high unmet needs reported they "haven't gotten around to it" due to a lack of will and for fear of what others would think (mental health stigma). Additionally, patient profiles had notable similarities between the two high unmet and no unmet needs groups. Patients from both groups discussed health issues, pointing out that suicidal behaviors and poor perceived mental/physical health conditions repeatedly brought them back to the ED. However, in terms of social issues, patients with no unmet needs sought more help regarding financial, housing and/or food difficulties, whereas patients with high unmet needs mentioned being affected by the loss of a loved one or lack of social support (Table 3). Likewise, Parkman et al. (2017) found that few participants with SRD were interested in using addiction treatment centers, instead repeatedly visiting the ED to seek help for other health and social conditions such as MD or housing.

5.3 Recommendations from study findings

Several strategies stemming from our study findings may help address the unmet needs and barriers to care among ED users with MD. As mentioned in article 1, having a regular source of care was protective against barriers to outpatient care. Additionally, in article 2, high ED users mentioned difficulties accessing public primary mental health care due to long wait times.

Therefore, greater access to family doctors in collaboration with other primary and community services might allow for improved routine and preventive care that may reduce the frequency of ED use commonly seen among patients perceiving high barriers to care. Previous literature has also shown that mental healthcare care access can be improved by increasing the supply of primary mental health care providers who focus on mental health and crisis intervention training, and more facilities providing after-hours primary care. Additionally, health care teams tailored to high ED user profiles (e.g., crisis teams, home treatment teams) would also be able to help patients with MD in crisis to receive more rapid and adequate help at home or through alternative services, rather than ED (Johnson et al., 2022).

As mentioned in article 1 and 2, despite most high ED users being overall high service users, they still found it difficult to receive the frequency of follow-up care they required. Therefore, better coordination and continuity of care may be particularly beneficial for this vulnerable population. An emphasis should be made on forming therapeutic alliances between service provider and user, such as agreement on their goals, tasks and nature of the care relationship, as it has been strongly correlated with health outcomes and service use (Hartley et al., 2020). This is potentially of even greater clinical relevance for high ED users facing significant feelings of shame and stigma (Poremski et al., 2016). Additionally, better collaboration between the ED, primary and specialized outpatient services through improving referral protocols, implementing strategies to increase follow-up care after ED discharge, and establishing case management programs in outpatient settings, like ICM or ACT would all help break the cycles that lead to high ED use (Heyland et al., 2017; Joo & Liu et al., 2017).

Results from our second article also emphasized the importance of patients having better knowledge of mental health and addiction services being protective from high barriers to care. The high ED users with no unmet needs could benefit greatly by being able to better recognize their own mental health needs and feel more confident and motivated to seek professional care. Brief interventions such as ED liaison agents, system navigator programs, community health workers and educational outreach programs, have been shown to increase patient knowledge and enhance access to proper services and reduce inappropriate ED use (Teggart et al., 2023; Reid et al., 2020). A recent review also indicated that intensive interventions (e.g., ICM or ACT) are

more effective in addressing the needs of high ED users with diverse mental health issues, whereas peer support and brief interventions are more suitable for patients with less unmet needs or high ED use (Gabet et al., 2020).

5.4 Strengths, limitations and suggestions for future research

5.4.1 Strengths

One of the main strengths of the study was its design and the integration of service network medical records with patient surveys to assess comprehensive data linked to service use profiles and types of barriers to outpatient care. The addition of a qualitative approach also allowed for a more detailed and nuanced portrayal of the reasons given by high ED users for mental health reasons. Especially regarding identifying sources of patient dissatisfaction with services, a qualitative approach offers patients the opportunity to provide contextual opinions on the specific aspects of services. In contrast, standardized satisfaction questionnaires are known to generate exaggerated high scores (Perreault et al., 1993). Moreover, the prioritization of the patients' perspective is another strength of the study. High ED users are a vulnerable and marginalized population that faces stigma and may not have the opportunity to have their voices heard. This thesis ensured they were able to share valuable information about their experience. Similarly, complementing the findings from the first profiles study (article 1) with the second associated variables study (article 2) and met vs unmet needs qualitative interviews also added an interesting dimension to this thesis, not previously seen in the literature before.

5.4.2 Limitations and suggestions for future research

Despite this work contributing valuable insight on barriers to outpatient care and unmet needs among ED users with MD, the study has some limitations. First, we used the CCHS questions that pertain to unmet needs but those were not measured with a standardized scale, and only broadly analyzed unmet needs. Utilizing a standardized instrument such as the PNCQ to measure unmet needs would have allowed for the collection of data on specific types of unmet needs (e.g., counseling, information, medication) and help recommend more targeted interventions. Barriers to care in the two articles weren't also related to each type of unmet needs, which would have provided more comprehensive information. In addition, we measured "frequency of barriers" to care and not of "types of unmet needs," which is quite original, but quite limiting comparisons with other previous studies. Similarly, certain variables such as mental health stigma also had measurement instrument limitations. Stigma was only measured quantitatively by a single multiple-choice item, which may not be fully representative of the stigma perceived by patients. Standardized questionnaire such as the Stigma and Self-Stigma scales assessing other stigma dimensions could be used in future research (Docksey, 2022). Second, questions about barriers to care were only asked to patients who perceived unmet needs, but the lack of perceived unmet needs may also be an important motivational barrier to care in itself, as seen by high ED users with no unmet needs perceiving more barriers to care in the qualitative component of the second article. Additionally, there may also be limitations to categorization of motivational barriers. In the case of common mental disorders (such as anxiety and depression), the symptomatology in itself may lead to avoidance behaviours such as avoiding crowds and situations where they have little control over their environment. As a result, their motivational barrier may simply be the reaction to inadequate treatment modalities. Therefore, more qualitative or mixed methods studies on the specific types of barriers to care among high ED users are needed to confirm these findings. Third, since data was only collected over 12 months (2021), this was only representative of perceived barriers to care in that moment of time. Moreover, the cross-sectional design cannot establish a cause-and-effect relationship or analyze behavior over time. Extending the study duration of this work via longitudinal studies would not only provide a baseline but could also provide novel insight on how structural barriers related to continuity of care and patient knowledge may change over time. Fourth, the participants recruited for this study may not be representative of the overall study population. Since younger patients under 30 were underrepresented in our study sample and data collection took place in large ED networks, it would be interesting to recruit samples of younger participants or across other areas of care or different study settings to enhance generalization of study findings. Finally, the data for this study came solely from patients and may introduce memory-recall and social desirability biases. Introducing the viewpoints of ED clinicians, other healthcare providers or relatives could have revealed different motivational barriers to care or provided additional insights on structural barriers related to the healthcare system in Quebec.

5.5 Conclusion

The central focus of this thesis was to better understand the perceived barriers to care and unmet needs among high ED users with MD in the Quebec context. The first article identified three distinct profiles using cluster analysis and found the subgroup that perceived the most barriers to care were often high ED users with lower service satisfaction and perceived worse mental/health conditions. The second mixed-methods study identified the key patient characteristics, service use patterns, and structural and motivational barriers to outpatient care that explained high ED use among patients with MD. These results demonstrated that patients with more health issues and who were dissatisfied with services would perceive more barriers to care. Additionally, structural barriers were more prevalent than motivational ones in relation to high ED use, as outpatient services were often deemed unreliable, and patients were referred to the ED due to doctors' inexperience with crises and care inconsistency. This suggested that accessibility, continuity and adequacy of care is crucial for reducing perceived barriers to outpatient care and reducing ED use among high ED users with no unmet needs.

Several recommendations were made based on the thesis findings to improve the quality of outpatient services and better address the unmet needs of ED users with MD. The strategies proposed involved improving access to mental healthcare services, coordination and continuity of care, and increasing patient knowledge of mental health and addiction services. To reduce barriers to outpatient care among high ED users, we also recommend implementing more crisis teams and home treatment teams, ICM or ACT, more brief interventions and peer support initiatives. In conclusion, our results are of interest to researchers, healthcare professionals, policymakers, and healthcare administrators who aim to reduce unmet needs and barriers to care for ED users with MD, whether for research, population monitoring, or improvement of health system quality purposes

Table 3. Summary of significant findings from Article 1 (ED users' profiles) and Article 2 (Associated variables related to barriers to care). Spaces filled in red refers to association with higher number of barriers* to care (negative), yellow refers to moderate number of barriers to care (middle), green refers to association with lower number of barriers to care (positive), and white spaces are for variables that were tested but were insignificant.

	Study	Article 1 – ED users' profiles			Article 2 - Associated variables related to barriers to care	
Independent Variable	Groups	Association with lower (number of) barriers to outpatient care	Association with moderate (number of) barriers to outpatient care	Association with higher (number of) barriers to outpatient care	Association with lower/no (number of) barriers to outpatient care	Association with higher (number of) barriers to outpatient care
		Profile 1	Profile 2	Profile 3		
Sociodemograp	Sex		Least women	Most women		
hic variables	Age				Older (50+ years)	Younger (18-49 years)
	Education level					
	Civil status					

	Employment status						
	Household income						
	Type of hous	ing					
	Mental health stigma		Least		Most	Low	High (more prevalent)
	Quality of life		Higher	Highest	Lowest	Higher	Lower
Clinical	Principal mental disorders (MD)	Serious MD	Less	More			
variables		Personality Disorders		Less	More		
		Common MD	More	Least	Most		
	Substance-rel (SRD) or co- MD-SRD	lated disorders					
	Suicidal behaviors (suicide attempt or ideation)		More	Least	Most	Yes	No
	Perceived phy	ysical/mental	Higher	Highest	Lowest	Higher	Poor

	health conditions					
	Chronic physical illnesses (CPI) or MD-chronic physical illnesses		Least	Most		
	Violent/disturbed behaviors or social problems					
	Percentage of high priority in emergency department (ED) triage (0-33%)	Higher	Highest	Lowest		
Service use variables	Poor knowledge of mental health or addiction services				No	Yes
	Having a family doctor					
	Having a case manager	Most	Least	More		
	Number of consultations with general practitioners (GP)	More	Least	Most		

Number of primary care service use other than with GP	Most	Least			
Number of private psychologist consultations					
Number of specialized outpatient care					
Consulting a psychiatrist					
Receiving psychosocial interventions in community healthcare centers				More difficulty accessing	
Satisfaction with outpatient services	Highest		Lowest	Higher (dissatisfied with addiction treatment centers only)	Lower
High ED use	More	Lowest	Most		

	Number of recurrent ED users (chronic high ED use)	More	Lowest	Most		
	High hospitalization					
Structural barriers	Accessibility				More difficulty accessing public psychosocial services or psychologists	More difficulty accessing family doctors
	Continuity of care				Satisfactory continuity of care, but only after years of self-advocacy	More difficulty finding a regular care provider
	Adequacy of care				Inadequate crisis centers	High turnover in primary care workers = inconsistency, weak

				therapeutic alliances, and hindered recovery
Motivational	Health-seeking behaviors		More preferred	More reported
barriers			to manage by	they "haven't
			themselves	gotten around
				to it" due to a
			More lacked	lack of will and
			confidence in	for fear of what
			healthcare	others would
			system	think
	Patient profiles - social		Mentioned	Mentioned
	issues		more being	more financial,
			affected by the	housing and/or
			loss of a loved	food
			one or lack of	difficulties, and
			social support	conflicts with
				family
				members

	Patient profiles - health			Suicidal	Suicidal
	issues			behaviors and	behaviors and
				poor perceived	poor perceived
				mental/physical	mental/physical
				health	health
				conditions	conditions
				brought them to	brought them to
				the ED	the ED
		1			

* Barriers to outpatient care included: structural barriers (e.g., help not readily available; job interfered (e. g., workload, work schedule, uncooperative supervisor); could not afford to pay, insurance didn't cover; language barriers; lack of transportation; don't know how or where to get this kind of help; dissatisfied with the quality of services) and motivational barriers (e.g., preferred to manage by myself; haven't gotten around to it (e.g., too busy); didn't have confidence in the health care system or social services; was afraid of what others would think of me; preferred to ask family or friends for help).

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