Models of shared care for the management of psychotic disorder after first diagnosis in Ontario

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Abstract

Objective To describe the provision of care for young people following first diagnosis of psychotic disorder.

Design Retrospective cohort study using health administrative data.

Setting Ontario.

Participants People aged 14 to 35 years with a first diagnosis of nonaffective psychotic disorder in Ontario between 2005 and 2015 (N=39,449).

Main outcome measures Models of care, defined by psychosis-related service contacts with primary care physicians and psychiatrists during the 2 years after first diagnosis of psychotic disorder.

Results During the 2-year follow-up period, 29% of the cohort received only primary care, 30% received only psychiatric care, and 32% received both primary and psychiatric care (shared care). Among the shared care group, 72% received care predominantly from psychiatrists, 20% received care predominantly from primary care physicians, and 9% received approximately equal care from psychiatry and primary care. Variation in patient and physician characteristics was observed across the different models of care.

Conclusion One in 3 young people with psychotic disorder received shared care during the 2-year period after first diagnosis. The findings highlight opportunities for increasing collaboration between primary care physicians and psychiatrists to enhance the quality of care for those with early psychosis.

Editor's key points

- Approximately half of patients with a first diagnosis of psychotic disorder received ongoing mental health care from primary care physicians, but only one-third of them were receiving shared care.
- In the primary care model, a greater proportion of patients were diagnosed with schizophrenia spectrum disorders, received their first diagnosis in primary care, and had more comorbid conditions relative to other models. In the psychiatric care model, a greater proportion of patients were diagnosed with psychosis not otherwise specified, received their diagnosis in secondary or tertiary care, and lived in an area that was urban and had greater marginalization. In the shared care models, a greater proportion of patients were immigrants or refugees, had no chronic conditions, and had no service use in the 2 years before first diagnosis.
- The findings suggest that there are opportunities to further engage primary care physicians in early psychosis intervention. In the future, researchers should investigate whether models of shared care are associated with improved quality of care in the short term and better clinical outcomes in the long term.

Points de repère du rédacteur

- Environ la moitié des patients après un premier diagnostic de trouble psychotique avaient reçu des soins continus en santé mentale d'un médecin de soins primaires, mais seulement le tiers d'entre eux avaient reçu des soins partagés.
- Dans le modèle des soins primaires, une plus grande proportion des patients avaient reçu un diagnostic de trouble du spectre de la schizophrénie, avaient d'abord été diagnostiqués en soins primaires et souffraient de problèmes concomitants plus nombreux que dans d'autres modèles. Dans le modèle des soins psychiatriques, une plus grande proportion des patients avaient reçu un diagnostic de psychose sans autres précisions, posé en soins secondaires ou tertiaires, vivaient en milieu urbain et avaient fait l'objet d'une plus grande marginalisation. Dans le modèle des soins partagés, une plus grande proportion des patients étaient des immigrés ou des réfugiés, n'avaient pas de problèmes chroniques et n'avaient pas recouru à des services au cours des 2 années précédant le premier diagnostic.
- Les constatations font valoir qu'il existe des possibilités de mobiliser davantage les médecins de soins primaires dans les interventions pour la psychose à un stade précoce. À l'avenir, les chercheurs devraient se pencher sur la question de savoir si les soins partagés sont associés à une meilleure qualité des soins à court terme et à des issues cliniques plus favorables à long terme.

Modèles de soins partagés pour la prise en charge des troubles psychotiques après le diagnostic initial en Ontario

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Résumé

Objectif Décrire la prestation des soins à de jeunes gens à la suite d'un premier diagnostic de trouble psychotique.

Type d'étude Une étude rétrospective de cohortes à l'aide de données administratives sur la santé.

Contexte L'Ontario.

Participants Des personnes âgées de 14 à 35 ans qui avaient reçu un premier diagnostic de trouble psychotique non affectif en Ontario entre 2005 et 2015 (N=39 449).

Principaux paramètres à l'étude Les modèles de soins, tels que définis par des contacts avec des services liés à la psychose dispensés par des médecins de soins primaires et des psychiatres durant les 2 années suivant un premier diagnostic de trouble psychotique.

Résultats Durant la période de 2 ans de suivi, 29 % de la cohorte n'avaient reçu que des soins primaires, 30 % avaient reçu seulement des soins psychiatriques et 32 % avaient reçu à la fois des soins primaires et psychiatriques (soins partagés). Au sein du groupe des soins partagés, 72 % avaient surtout reçu des soins d'un psychiatre, 20 % avaient surtout été traités par des médecins de soins primaires et 9 % avaient reçu des soins en parts à peu près égales en psychiatrie et en soins primaires. Les variations dans les caractéristiques des patients et des médecins ont été observées dans les différents modèles de soins.

Conclusion Une jeune personne sur 3 souffrant d'un trouble psychotique avait reçu des soins partagés durant la période de 2 ans suivant le diagnostic initial. Les constatations mettent en évidence des possibilités d'une plus grande coopération entre les médecins de soins primaires et les psychiatres pour améliorer la qualité de vie des jeunes à un stade précoce de psychose.

Primary care physicians play an integral role in early psychosis intervention in Canada. Two-thirds of young people make help-seeking contacts in primary care for mental health concerns before first diagnosis of psychotic disorder, which considerably increases in the year preceding diagnosis,[1] and one-third ultimately receive their first diagnosis from a primary care physician.[2] Involvement of primary care physicians during help seeking is also associated with lower likelihood of negative pathways to care and readmissions to hospital,[3,4] and with greater likelihood of physician follow-up.[5] Despite the recent proliferation of early psychosis intervention programs, many young people do not access these specialized services after a first diagnosis of psychotic disorder and instead receive ongoing mental health care from primary care physicians.[6-8]

Serious mental illnesses such as psychotic disorders are generally beyond the core training and standard practice of primary care.[9,10] Primary care physicians have described their care for patients with these illnesses as inadequate,[11,12] citing a lack of time, resources, support, and clinical experience as contributing factors.[13,14] Although many primary care physicians prefer psychiatrist involvement in diagnosing and treating serious mental illness,[9,10] they frequently report issues in navigating psychiatric services, including limited access to consultations, long wait times for referrals, and overall poor communication.[15,16] For patients with serious mental illness, these issues can lead to uncoordinated, discontinuous, and unsatisfactory care,[17,18] as well as considerable barriers to accessing necessary services.[19,20]

A shared care model is a process of systematic collaboration between primary care and specialist physicians when providing care for patients with chronic health conditions.[21,22] Physicians practising in this model allocate care according to their defined roles and respective capabilities, while also sharing expertise, resources, and decision making.[23,24] A basic framework of shared care involves a system of regular communication between physicians for the coordination of patient care.[23] In its most comprehensive form, shared care aims to fully integrate primary and specialist care, including colocation of services, unification of medical records, and implementation of combined treatment protocols.[24] For patients with mental illness, shared care has demonstrated success relative to usual care in improving several patient-centred, service-related, and clinical outcomes.[25-27] While research has focused on common mental disorders, such as anxiety and depression, there is evidence to suggest that shared care could enhance care for young people with psychotic disorders.[28]

Currently, there is limited information on health service provision for psychotic disorders by primary care physicians in Ontario. Prior research on this topic only examined use of primary care by patients of early psychosis intervention services, and did not consider shared care between primary care physicians and outpatient psychiatrists.[6,7] Since early psychosis is relatively rare in the context of primary care, the importance of primary care physicians in ongoing management of patients with psychotic disorders has been underappreciated. Therefore, we sought to describe models of care by primary care physicians for young people following a first diagnosis of psychotic disorder in Ontario, and to describe the characteristics of patients and physicians across these models of care.

Methods

We conducted a retrospective cohort study using population-based health administrative data from ICES in Ontario. ICES is an independent, non-profit research institute that is a prescribed entity under section 45 of Ontario's Personal Health Information Protection Act,[29] which enables compilation and analysis of personal health information related to the management, evaluation, and monitoring of the health system without consent for such purposes. The portions of this study that involve health administrative data from ICES do not require review by a research ethics board. Databases at ICES contain information on health service encounters, as well as characteristics of patients and physicians, and are linked using unique, encoded identifiers.

Our cohort comprised Ontario residents between the ages of 14 and 35 years with an incident diagnosis of nonaffective psychotic disorder between April 2005 and March 2015.[30] Cases were identified by a diagnosis of schizophrenia spectrum disorder or psychosis not otherwise specified, either from 1 hospitalization or from 2 visits to an emergency department or outpatient physician within a 1-year period. The index date was defined as either the date of discharge from hospitalization or the date of first visit to an emergency department or outpatient clinic. Cases with a diagnosis before cohort inception were removed to exclude prevalent cases. A modified version of this algorithm has been previously validated using medical charts at ICES.[31]

We identified patient contacts with primary care physicians (family physicians and pediatricians) and outpatient psychiatrists that had a diagnostic code for nonaffective psychotic disorder over the 2 years after the index date. We categorized patients into 4 models of care based on the number of contacts with each type of physician during this 2-year follow-up period: only primary care, only psychiatric care, both primary care and psychiatric care (shared care), and neither type of care (low engagement). We further categorized patients receiving shared care according to the distribution of care between the 2 specialties: primary care dominant, psychiatric care dominant, and approximately equal care.

Patient sociodemographic characteristics included age, sex, rural residence, migrant status, and

neighbourhood-level marginalization using the Ontario Marginalization Index.[32] Clinical characteristics included the specific diagnosis of psychotic disorder and setting of diagnosis, as well as the number and type of comorbid chronic conditions derived from the Johns Hopkins Adjusted Clinical Group System, version 10.[33] We also examined service use in the 2 years before first diagnosis, including hospital admissions and emergency department visits, both for psychiatric or nonpsychiatric reasons.

Physician characteristics included age, sex, years since medical school graduation, international medical school graduate status, and practice location. For primary care physicians, we also described their practices in terms of size, model, and comprehensiveness. Practice models were defined by the number and type of health professionals involved in the associated physician compensation model.[34] Practice comprehensiveness was determined according to the breadth of care provided across multiple service-related domains, which has been described in detail elsewhere.[35]

We described the cohort using frequencies and proportions, as well as medians and interquartile ranges. All analyses were conducted using SAS, version 9.4.

Results

We identified 39,449 patients with a first diagnosis of nonaffective psychotic disorder in Ontario during the 10-year period (**Figure 1**). During the 2 years following first diagnosis, 29% (n=11,304) of patients received care for psychosis exclusively from primary care physicians, 30% (n=11,818) received care exclusively from psychiatrists, and 32% received shared care from both specialties (n=12,786). Among patients receiving shared care, 72% (n=9179) received care predominantly from psychiatrists, 20% (n=2504) received care predominantly from primary care physicians, and 9% (n=1103) received approximately equal care between the 2 specialties. Finally, 9% (n=3541) of the cohort did not receive care for psychosis from either specialty during the 2-year follow-up period.

Across the different models of care, we observed some variation in the distribution of patient characteristics (**Table 1**) and physician characteristics (**Table 2**). In the primary care model, a greater proportion of patients were diagnosed with schizophrenia spectrum disorders, received their first diagnosis in primary care, and had more comorbid conditions relative to other models. In the psychiatric care model, a greater proportion of patients were diagnosed with psychosis not otherwise specified, received their diagnosis in secondary or tertiary care, and lived in an area that was urban and had greater marginalization. In the shared care models, a greater proportion of patients were immigrants or refugees, had no chronic conditions, and had no service use in the 2 years before first diagnosis. Patients with low engagement were largely diagnosed with psychosis not otherwise specified, received their first diagnosis in secondary or tertiary care, had multiple chronic conditions, and had greater prior service use.

Among primary care physicians, the primary care model had a greater number of physicians with a longer time from graduation and had a greater proportion with practices that were rural, team-based, and comprehensive when compared with the shared care models. However, there was minimal variation in characteristics among psychiatrists across the psychiatric care and shared care models.

Discussion

In Canada, enhanced integration of specialized mental health services into primary care is at the core of health care reforms.[36] Herein, we operationalized models of shared care for patients with nonaffective

Figure 1. Distribution of patients with a first diagnosis of psychotic disorder across models of care

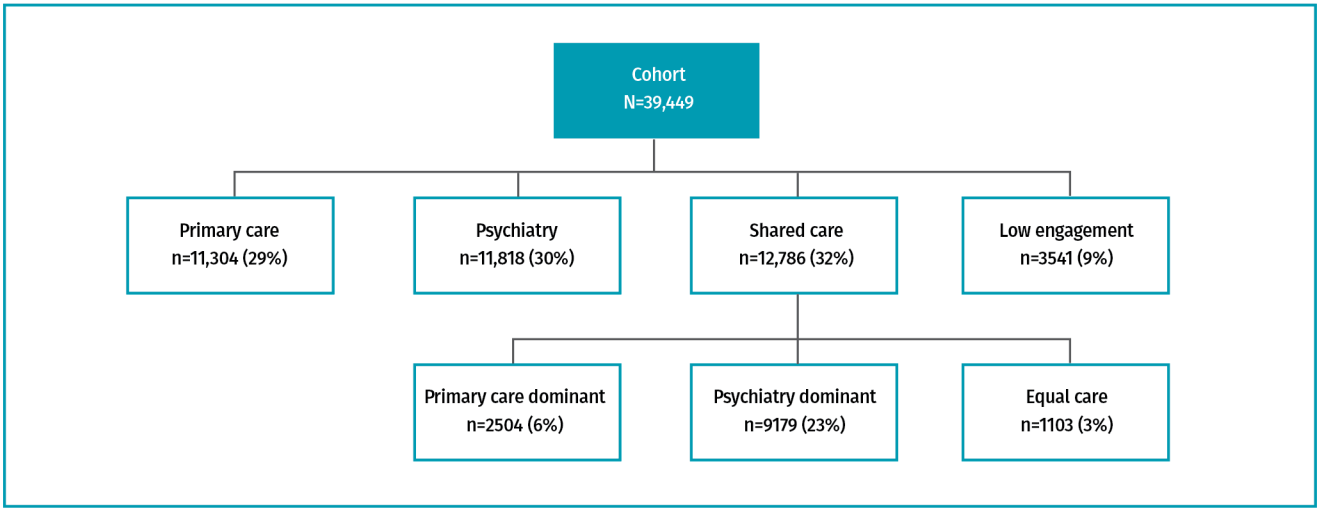

Table 1. Characteristics of patients with a first diagnosis of psychotic disorder, by model of care: *N=39,449*.

CHARACTERISTIC	PRIMARY CARE (n=11,304)	PSYCHIATRIC CARE (n=11,818)	SHARED CARE			LOW ENGAGEMENT (n=3541)
			PRIMARY CARE DOMINANT (n=2504)	PSYCHIATRIC CARE DOMINANT (n=9179)	EQUAL CARE (n=1103)	
Physician visits per year						
Primary care, median (IQR)	1.0 (0.5-2.0)	0 (0)	3.0 (1.5-6.5)	1.0 (0.5-2.0)	0.5 (0.5-1.0)	0 (0)
Psychiatric care, median (IQR)	0 (0)	2.0 (1.0-6.0)	1.0 (0.5-2.0)	8.0 (4.0-15.5)	0.5 (0.5-1.0)	0 (0)
Sociodemographic characteristics						
Median (IQR) age, y	25 (20-30)	23 (19-28)	23 (19-29)	22 (19-27)	23 (20-29)	24 (20-30)
Sex, n (%)						
• Male	6295 (55.7)	7551 (63.9)	1759 (70.2)	6545 (71.3)	752 (68.2)	2147 (60.6)
• Female	5009 (44.3)	4267 (36.1)	745 (29.8)	2634 (28.7)	351 (31.8)	1394 (39.4)
Residence, n (%)						
• Urban	9934 (87.9)	11,049 (93.5)	2266 (90.5)	8508 (92.7)	1010 (91.6)	3167 (89.4)
• Rural	1370 (12.1)	769 (6.5)	238 (9.5)	671 (7.3)	93 (8.4)	374 (10.6)
Migrant status, n (%)						
• Nonimmigrant	9764 (86.4)	9743 (82.4)	1947 (77.8)	7075 (77.1)	877 (79.5)	3010 (85.0)
• Immigrant	1159 (10.3)	1576 (13.3)	412 (16.5)	1601 (17.4)	173 (15.7)	380 (10.7)
• Refugee	381 (3.4)	499 (4.2)	145 (5.8)	503 (5.5)	53 (4.8)	151 (4.3)
Marginalization, n (%)						
• Dependency, lower (1-3)	10,155 (89.8)	11,113 (94.0)	2294 (91.6)	8579 (93.5)	1029 (93.3)	3168 (89.5)
• Dependency, higher (4-5)	1149 (10.2)	705 (6.0)	210 (8.4)	600 (6.5)	74 (6.7)	373 (10.5)
• Material deprivation, lower (1-3)	4721 (41.8)	4394 (37.2)	879 (35.1)	3330 (36.3)	405 (36.7)	1524 (43.0)
• Material deprivation, higher (4-5)	6583 (58.2)	7424 (62.8)	1625 (64.9)	5849 (63.7)	698 (63.3)	2017 (57.0)
• Residential instability, lower (1-3)	3640 (32.2)	3483 (29.5)	955 (38.1)	3010 (32.8)	363 (32.9)	970 (27.4)
• Residential instability, higher (4-5)	7664 (67.8)	8335 (70.5)	1549 (61.9)	6169 (67.2)	740 (67.1)	2571 (72.6)
• Ethnic concentration, lower (1-3)	1128 (10.0)	727 (6.2)	176 (7.0)	620 (6.8)	79 (7.2)	309 (8.7)
• Ethnic concentration, higher (4-5)	10,176 (90.0)	11,094 (93.9)	2328 (93.0)	8559 (93.2)	1024 (92.8)	3232 (91.3)
Clinical characteristics						
Psychotic disorder, n (%)						
• Index diagnosis of SSD	7309 (64.7)	4874 (41.2)	1296 (51.8)	4024 (43.8)	458 (41.5)	1447 (40.9)
• Index diagnosis of PNOS	3995 (35.3)	6944 (58.8)	1208 (48.2)	5155 (56.2)	645 (58.5)	2094 (59.1)
• Diagnosis setting, 1° care	7515 (66.5)	856 (7.2)	817 (32.6)	1558 (17.0)	267 (24.2)	788 (22.3)
• Diagnosis setting, 2° or 3° care	3789 (33.5)	10,962 (92.8)	1687 (67.4)	7621 (83.0)	836 (75.8)	2753 (77.7)
Comorbid disorders, n (%)						
• Number of ADGs, low (≤5)	4616 (40.8)	5675 (48.0)	1290 (51.5)	5193 (56.6)	497 (45.1)	1417 (40.0)
• Number of ADGs, medium (6-9)	4072 (36.0)	3985 (33.7)	773 (30.9)	2747 (29.9)	376 (34.1)	1237 (34.9)
• Number of ADGs, high (≥10)	2616 (23.1)	2158 (18.3)	441 (17.6)	1239 (13.5)	230 (20.9)	887 (25.0)
• Chronic medical condition	3802 (33.6)	3373 (28.5)	674 (26.9)	2118 (23.1)	321 (29.1)	1242 (35.1)
• Chronic psychosocial condition	9393 (83.1)	9428 (79.8)	1842 (73.6)	6596 (71.9)	852 (77.2)	2960 (83.6)
Service use over 2 y before index date						
Hospital admissions, n (%)						
• For psychiatric reason	1551 (13.7)	1380 (11.7)	291 (11.6)	822 (9.0)	157 (14.2)	548 (15.5)
• For any other reason	1353 (12.0)	1119 (9.5)	214 (8.5)	642 (7.0)	124 (11.2)	495 (14.0)
Emergency department visits, n (%)						
• For psychiatric reason	3391 (30.0)	4137 (35.0)	793 (31.7)	2828 (30.8)	397 (36.0)	1493 (42.2)
• For any other reason	6816 (60.3)	6695 (56.7)	1388 (55.4)	4821 (52.5)	661 (59.9)	2288 (64.6)

ADG—aggregated diagnosis group, IQR—interquartile range, PNOS—psychosis not otherwise specified, SSD—schizophrenia spectrum disorder.

Table 2. Characteristics of physicians caring for patients with a first diagnosis of psychotic disorder, by model of care: ***Some numbers and percentages are missing for each characteristic.***

CHARACTERISTIC	PRIMARY CARE (n=11,304)	PSYCHIATRIC CARE (n=11,818)	SHARED CARE		
			PRIMARY CARE DOMINANT (n=2504)	PSYCHIATRIC CARE DOMINANT (n=9179)	EQUAL CARE (n=1103)
Primary care					
Median (IQR) age, y	51 (42-58)	NA	52 (43-57)	49 (40-57)	49 (39-57)
Sex, n (%)					
• Male	8169 (72.3)	NA	1920 (76.7)	6744 (73.5)	825 (74.8)
• Female	3041 (26.9)	NA	555 (22.2)	2256 (24.6)	260 (23.6)
Physician type, n (%)					
• Family physician	10,181 (90.1)	NA	2270 (90.7)	7362 (80.2)	911 (82.6)
• Pediatrician	155 (1.4)	NA	16 (0.6)	132 (1.4)	7 (0.6)
• Other	806 (7.1)	NA	172 (6.9)	1401 (15.3)	167 (15.1)
Median (IQR) years since graduation	25 (15-33)	NA	26 (17-32)	23 (13-31)	23 (13-31)
International graduate, n (%)					
• No	9325 (82.5)	NA	2101 (83.9)	7453 (81.2)	934 (84.7)
• Yes	1879 (16.6)	NA	372 (14.9)	1531 (16.7)	150 (13.6)
Practice location, n (%)					
• Urban	10,247 (90.6)	NA	2327 (92.9)	8600 (93.7)	1025 (92.9)
• Rural	967 (8.6)	NA	149 (6.0)	402 (4.4)	61 (5.5)
Practice type, n (%)					
• Solo	3947 (34.9)	NA	998 (39.9)	4524 (49.3)	570 (51.7)
• Team, physician	6044 (53.5)	NA	1247 (49.8)	3792 (41.3)	430 (39.0)
• Team, multidisciplinary	1313 (11.6)	NA	259 (10.3)	863 (9.4)	103 (9.3)
Practice comprehensiveness, n (%)					
• Comprehensive	8463 (74.9)	NA	1770 (70.7)	5479 (59.7)	641 (58.1)
• Mental health	177 (1.6)	NA	39 (1.6)	129 (1.4)	12 (1.1)
• Non–mental health	1009 (8.9)	NA	339 (13.5)	1360 (14.8)	191 (17.3)
• Specialist	784 (6.9)	NA	151 (6.0)	1348 (14.7)	152 (13.8)
• Other	777 (6.9)	NA	176 (7.0)	679 (7.4)	90 (8.2)
Panel size, n (%)					
• <1200	3104 (27.5)	NA	589 (23.5)	1991 (21.7)	234 (21.2)
• 1200-2999	4474 (39.5)	NA	957 (38.2)	2843 (31.0)	315 (28.6)
• ≥3000	371 (3.3)	NA	64 (2.5)	227 (2.5)	26 (2.4)
Psychiatry					
Median (IQR) age, y	NA	49 (40-58)	52 (41-59)	49 (41-58)	51 (42-58)
Sex, n (%)					
• Male	NA	7974 (67.5)	1811 (72.3)	6540 (71.2)	768 (69.6)
• Female	NA	3702 (31.3)	630 (25.2)	2400 (26.1)	310 (28.1)
Median (IQR) years since graduation	NA	23 (14-33)	26 (14-34)	24 (13-33)	25 (14-34)
International graduate, n (%)					
• No	NA	6328 (53.5)	1283 (51.2)	4778 (52.1)	626 (56.8)
• Yes	NA	5344 (45.2)	1158 (46.2)	4156 (45.3)	451 (40.9)
Practice location, n (%)					
• Urban	NA	11,600 (98.2)	2421 (96.7)	8905 (97.0)	1072 (97.2)
• Rural	NA	81 (0.7)	20 (0.8)	36 (0.4)	7 (0.6)

IQR—interquartile range, NA—not applicable.

psychotic disorder in Ontario based on health service use during the 2 years following first diagnosis. These models can be used to describe how primary care physicians and psychiatrists deliver services at the population level for other mental health conditions and in other health care settings.[37]

We found that approximately half of patients with a first diagnosis of psychotic disorder received ongoing mental health care from primary care physicians, but only one-third of them were receiving shared care. Research has shown that a substantial proportion of patients do not receive outpatient psychiatric care within the first month after diagnosis,[5] and are not referred or admitted to early psychosis intervention services.[7,8] Patients who do not use these services are more likely to have mental health contacts with a primary care physician and less likely to contact a psychiatrist during the 2 years after first diagnosis.[7,8] Conversely, less than half of patients admitted to these services had contact with a primary care physician during this period.[6] While we do not have information on early psychosis intervention services, it may be worth exploring how these specialized services are associated with different models of care.

We observed some differences in characteristics of patients and physicians across the models of care. These differences could reflect patient factors, such as severity of psychotic symptoms and presence of physical comorbidities, as well as physician factors, such as clinical experience and referral decisions. Our findings may also be reflective of systemic factors, including the availability of resources and accessibility of services. Subsequent studies on this topic should examine the different factors influencing the unique patient and physician profiles associated with each model of care.

Collectively, our findings indicate that there are opportunities to further engage primary care physicians in early psychosis intervention. The evidence suggests that shared care could help improve the accessibility, acceptability, efficiency, and effectiveness of care for patients with psychotic disorders.[38] In the future, researchers should investigate whether our models of shared care are associated with improved quality of care in the short term and better clinical outcomes in the long term. However, the implementation of shared care requires careful consideration of individual-, organizational-, and system-level factors, all of which are necessary to effect meaningful change.[39]

Limitations

Although we did not identify care provided by nonphysicians, it should be noted that shared care is defined by the collaboration of primary care and specialist physicians. Our models of care were operationalized using health administrative data, and so we could not be certain whether physicians were engaging in shared care. However, prior research has demonstrated that administratively obtained definitions of shared care often reflect physician-reported shared care.[40] Future research could use clinical data to determine whether our operationalization accurately represents the care being provided by physicians.

Conclusion

During the 2 years after a first diagnosis of psychotic disorder, 1 in 3 young people in Ontario received shared care from both a primary care physician and a psychiatrist. These results suggest that there may be gaps in addressing the complex health needs of these patients, which can have an adverse impact on long-term clinical outcomes. Nonetheless, there may be opportunities for increased collaboration between primary care physicians and psychiatrists to enhance the quality of care for patients with early psychosis.

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Contributors

Dr Kelly K. Anderson and **Rebecca Rodrigues** conceptualized and designed the study; **Jennifer N.S. Reid** analyzed the data; and **Joshua C. Wiener** drafted the manuscript. All authors were involved in interpreting the data and preparing the manuscript for submission.

Competing interests

None declared

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