Bloom Program pharmacy teams' experiences providing mental health services during the COVID-19 pandemic

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Introduction

COVID-19 was declared a pandemic on March 11, 2020.[1] Pandemics can significantly affect mental health[2-4] and clinicians internationally see opportunities for rethinking mental health care delivery.[3] Ways forward include using all disciplines' skills to optimize care. For pharmacy teams, COVID-19 highlights essential traditional roles (e.g., dispensing) and amplifies often invisible roles that are important for mental health care (e.g., triage, information dissemination, bridging gaps for continuity).[5]

Pharmacy team mental health is also of concern during the pandemic.[6,7] Managing significant changes with personal protective equipment (PPE) and physical barriers, medication shortages and supply restrictions, COVID-19 information dissemination to the public and the effects of the pandemic on patient behaviour (e.g., verbal and physical abuse of pharmacy staff) have caused operational and patient care challenges[6-8] and negatively affected staff well-being.[7-9]

In Nova Scotia, pharmacies offering the Bloom Program (bloomprogram.ca[10]) provide medication management services, health system and other service navigation and collaboration with providers (e.g., family physicians, psychiatrists) to address medication and other health issues of program enrollees.[10-13] The Bloom Program is designed to build capacity for caring for people with lived experience of mental illness and substance use disorders in community pharmacy in Nova Scotia.[10-13] It became a provincial government-funded program following a demonstration project and evaluation. The Bloom Program uses a capitation funding model to reimburse pharmacies for services provided to patients enrolled in Bloom.[11-13] The demonstration project evaluation showed that over 80% of patients enrolled in the program for treatment optimization and 78% of patient-reported problems were resolved or improved at discharge.[11-13] Medication management activities were the highest in terms of proportion of the total activities that pharmacists engaged in with patients. Other activities that represented approximately 55% of the total activities included collaboration/communication, patient/family education, providing social support, navigation/resources support and supporting self-care.[13] During the evaluation, the time spent caring for Bloom Program patients over a 6-month enrollment had a cumulative median duration of 142 minutes per patient with an average follow-up encounter time of 15 minutes.[11,12]

As the pandemic evolves, information about the impact on the mental health care provided by community pharmacies is limited. We developed a survey to determine the pandemic's impact on pharmacy teams' experiences with the Bloom Program and on pharmacy teams' mental health.

Methods

Approach

The cross-sectional survey was developed using literature[14-16] and theory[17,18] and had 4 sections: 1) respondent characteristics; 2) assessment of pandemic on roles/abilities (21 items); 3) pandemic-related statements on pharmacy services and staff mental health (33 pharmacist items; 18 technician/assistant items); and 4) 2 open-ended questions ("What has been the most important change in the care of people living with mental illness and addictions in your community during COVID-19?" and "In what way, if any, has your pharmacy changed how it cares for people living with mental illness and addictions during COVID-19?"), with space for other comments.

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Ethics

The survey was approved as an improvement initiative for ensuring quality, evaluation or standards of care within a quality review program under the oversight of the Central Zone Pharmacy Interdisciplinary Quality Improvement & Safety Committee of Nova Scotia Health.

Data sources and analysis

The 38 active Bloom pharmacies at survey deployment were invited to participate between September 1 and October 2, 2020. Emails were sent to lead Bloom pharmacists regarding survey availability and this was to be shared with teams. Reminders were sent weekly.

Research Electronic Data Capture (i.e., REDCap) was used to collect data, which were exported to Excel and analyzed with descriptive statistics. Proportions and means (standard deviations) were calculated for variables related to demographics (e.g., age, sex, number of practice years, number of years offering the Bloom Program). Level of agreement was collapsed into Agree, Neither agree or disagree and Disagree for questions (e.g., "During COVID-19, my ability to perform my role in the pharmacy has been negatively affected by . . ."") using a 7-point Likert scale (Strongly agree, Agree, Slightly agree, Neither agree or disagree, Slightly disagree, Disagree, Strongly disagree). Proportions for each of Agree, Neither agree or disagree and Disagree were calculated using the number within each group divided by the total number of respondents for the question.

Results

Demographics

Sixty respondents (50 pharmacists [83%] and 10 technicians/assistants [17%]) completed the survey. The average age was 39.4 years (SD 11.1) and 44 (73%) were female. Mean number of practice years was 13.3 years (SD 9.9) and Bloom participation mean was 2.2 years (SD 1.9). Thirty-seven and 33 respondents answered the 2 open-ended questions, respectively, and 13 provided additional comments.

COVID-19 impacts on pharmacy teams and their roles

Fourteen of 21 listed factors were endorsed by ≥50% of respondents as negatively affecting professional roles during the pandemic (Table 1). Factors with ≥67% agreement related to medication shortages, reduced access to general and specialist physicians and changes to dispensing policies and dispensary procedures. One pharmacist commented, "New rules are made up every day and changed weekly. Webinars current on Friday are obsolete on Monday morning by the release of new information and policies."

Collectively, the requirement for PPE, new cleaning procedures and social distancing among staff and with patients were moderately endorsed as negatively affecting pharmacy team members' abilities to perform their professional roles. A pharmacist commented, "The business and policy changes and cleaning requirements put strain on the pharmacy itself during COVID, which made prioritizing time for Bloom program patients more difficult." Another discussed emotional situations: "It is hard to offer support in emotionally charged situations such as death, dementia, perceived lack of understanding by system/primary caregiver, when we are masked and speaking through plexiglass."

Most respondents agreed (n = 45, 75%) (Figure 1) that COVID-19 negatively affected pharmacy staff mental health but they did acknowledge feeling supported by their pharmacy teams (n = 56, 93%). Fear of contracting COVID-19 was similarly split between those who agreed (n = 27, 45%) and disagreed (n = 24, 40%), with a higher proportion feeling anxious about going to work (n = 37, 62%). One pharmacist identified several impacts: "Pharmacy teams stayed open, while others closed and adapted to best take care of their patients. It wasn't an easy path and has left some fatigued, burned out and needing help. Staff morale is at an all-time low, with mask-wearing and physical distancing continuing. . . . We continue to work hard to keep the status quo and do our best."

Access to the Bloom Program was considered essential by 63% (n = 38) of respondents (Figure 2). Pharmacists stated, "We are trying to spend more time on the Bloom Program as patients do really need it right now" and "Much higher anxiety levels with nowhere to direct patients—Bloom Program has been a great spot to fill in the gap!"

Alternative modes of communication (i.e., telephone and other forms of virtual care) were considered helpful substitutions for in-person encounters with Bloom Program patients (Figure 1). Teams demonstrated communication flexibility: "We have offered phone meetings . . . If that doesn't work for them, we provide them with a mask and they can meet with the pharmacist" (pharmacy assistant). Privacy was also cited: "Many appreciated the added privacy of conversing from the comfort of their home" (pharmacist). Many respondents (n = 39, 65%) were able to support their Bloom Program patients meaningfully. A pharmacy assistant commented, "To be there for our Bloom patients I think is a huge help . . . especially during isolation or lockdown. . . . Sometimes just a helpful voice and a listening ear is all someone needs." Another assistant commented, "A lot of them are not able to get in touch with their doctors. Talking to our staff has helped them get through this rough time."

Twelve (20%) respondents reported temporarily reducing or interrupting Bloom Program services, with social distancing and dispensary workload often cited. One pharmacist stated, "Bloom Program took a back seat to COVID like everything else." Another commented, "I no longer felt I had time to contact Bloom patients . . . I think many either had their own stresses or thought we wouldn't be offering the program during the pandemic. . . . Patients who seem to be struggling would be offered access to the program, but I didn't feel capable of

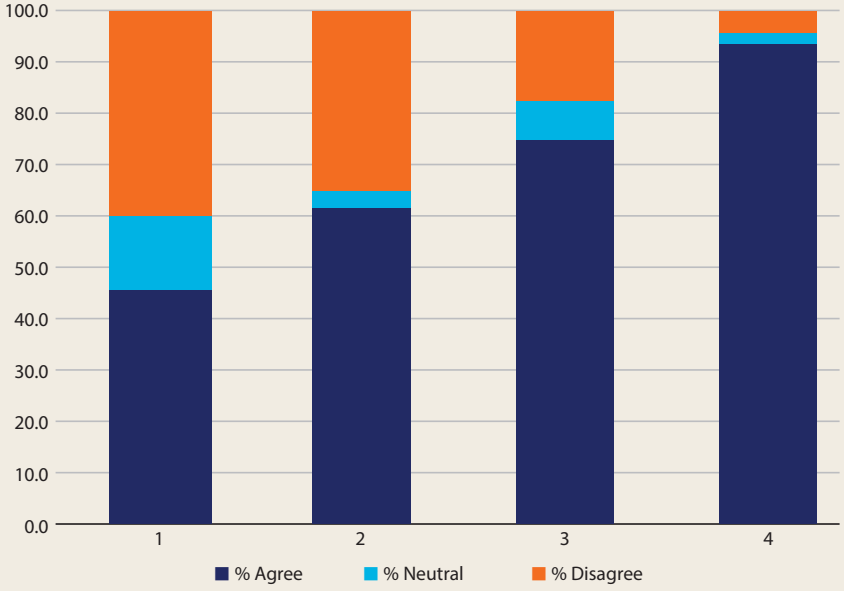
TABLE 1 Factors negatively affecting pharmacy teams' abilities to perform roles in the pharmacy ($n = 60$) during the COVID-19 pandemic

	Rank by highest level of agreement	Agree % (*n*)	Neither % (*n*)	Disagree % (*n*)
"During COVID-19, my ability to perform my role in the pharmacy has been negatively affected by . . ."				
Medication shortages	1	88.1 (53)	1.7 (1)	10.0 (6)
Changes in how family doctors care for their patients	2	73.3 (44)	8.3 (5)	18.3 (11)
Difficulties in accessing physician specialists	2	73.3 (44)	15.0 (9)	11.7 (7)
Difficulties in accessing family doctors	3	71.7 (43)	6.7 (4)	21.7 (13)
The 30-day medication supply policy	4	70.0 (42)	8.3 (5)	21.7 (13)
The number of sources communicating policy changes	5	68.3 (41)	13.3 (8)	18.3 (11)
The many policy changes that have occurred	6	66.7 (40)	13.3 (8)	20.0 (12)
Changes in pharmacy-related priorities	6	66.7 (40)	18.3 (11)	15.0 (9)
Cleaning requirements	6	66.7 (40)	10.0 (6)	23.3 (14)
Changes in how physician specialists care for their patients	7	61.7 (37)	23.3 (14)	15.0 (9)
Social distancing requirements between patients and staff in the pharmacy	8	56.7 (34)	11.7 (7)	31.7 (19)
Patient use of personal protective equipment	9	53.3 (32)	6.7 (4)	40.0 (24)
Difficulties in accessing nurse practitioners	10	51.7 (31)	20.0 (12)	28.3 (17)
A lack of personal protective equipment	10	51.7 (31)	5.0 (3)	43.3 (26)
Changes in how nurse practitioners care for their patients	11	46.7 (28)	25.0 (15)	28.3 (17)
Use of designated pharmacy teams to prevent cross-contamination	11	46.7 (28)	16.7 (10)	36.7 (22)
The presence of physical barriers (e.g., plexiglass)	12	45.0 (27)	13.3 (8)	41.7 (25)
Changes in my scope of practice from Nova Scotia College of Pharmacists	13	41.7 (25)	16.7 (10)	41.7 (25)
Social distancing requirements for staff in the dispensary area	14	35.0 (21)	21.7 (13)	43.3 (26)
Limits on the number of people allowed in the pharmacy at one time	15	30.0 (18)	23.3 (14)	46.7 (28)
Lack of hand sanitizer	16	25.0 (15)	10.0 (6)	65.0 (39)

expanding it." Another pharmacist cited volume, "The influx of mental health cases was alarming, but I couldn't add new Bloom patients to my workload and so many of these people were not known to me."

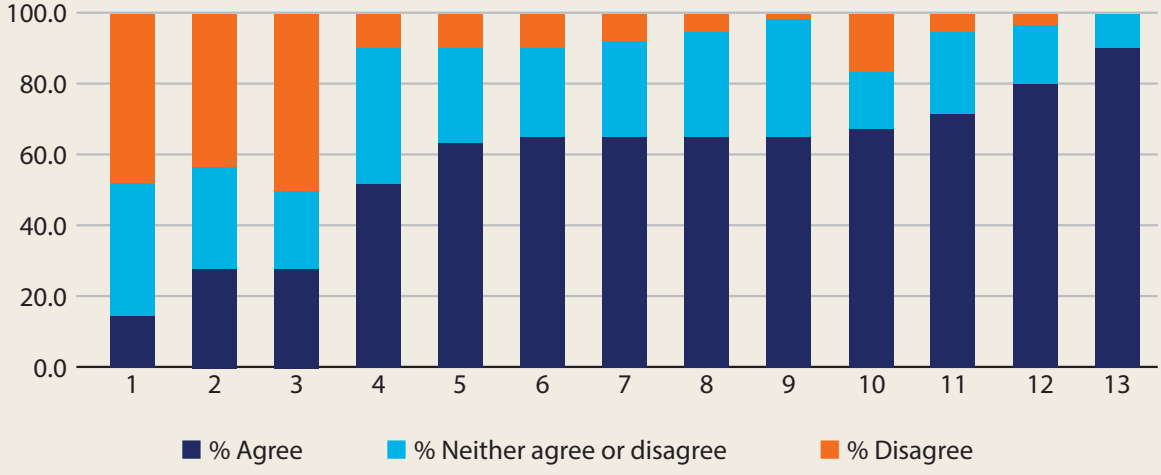
Pharmacy team members agreed that having experience with the Bloom Program at their pharmacy improved their readiness to respond to mental health needs (80%) (Figure 2) and they took pride that their pharmacy was offering the

FIGURE 1 Participant ratings of impacts of the COVID-19 pandemic on personal and team mental health and work ($N = 60$)



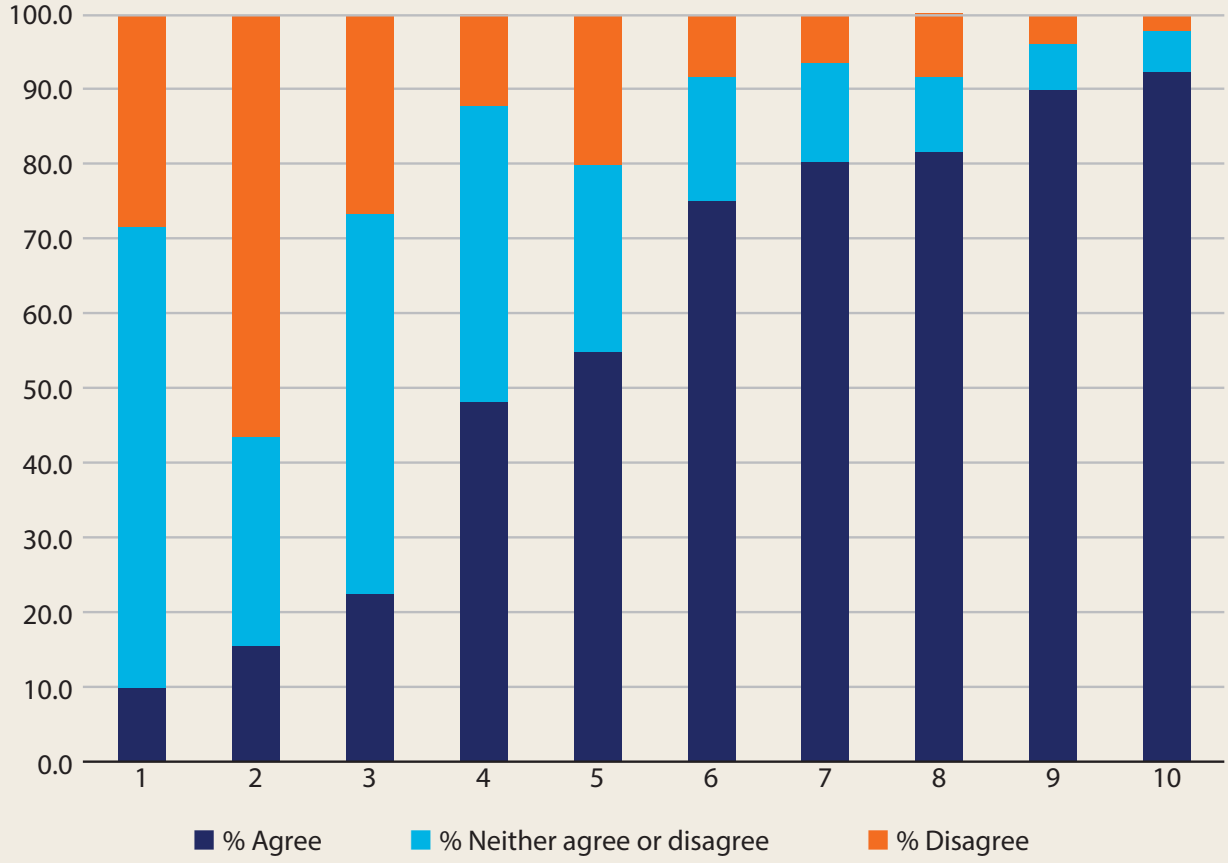
1. I am fearful of contracting COVID-19 at work.
2. I have felt anxious about coming to work during COVID-19.
3. The burden of COVID-19 has had a negative effect on pharmacy staff mental health.
4. I have felt supported by my pharmacy team during COVID-19.

FIGURE 2 Participant ratings of impacts on the Bloom Program during the COVID-19 pandemic ($N = 60$)



1. Prioritizing the Bloom Program over other essential pharmacy services has posed a financial risk to the pharmacy during COVID-19.
2. Providing Bloom Program services during COVID-19 has been a strain on my mental health.
3. I am concerned about being exposed to COVID-19 while providing care to people living with mental illness and addictions.
4. Other health care providers have valued our Bloom Program service more during COVID-19.
5. Virtual care contacts (remote patient care using telephone, live video, text messaging, and/or email) during COVID-19 have improved our ability to offer the Bloom Program.
6. My value as a health care provider to my Bloom Program patients has increased during COVID-19.
7. Access to the Bloom Program has been essential for my patients during COVID-19.
8. I have been able to help and support my Bloom Program patients in a meaningful way during COVID-19.
9. The Bloom Program has helped me stay connected with our mental health patients during COVID-19.
10. Telephone contact during COVID-19 has adequately compensated for reduced in-person patient care for Bloom Program patients.
11. Offering the Bloom Program has been an appropriate use of our pharmacy resources during COVID-19.
12. Having the Bloom Program established at our pharmacy improved our readiness to respond to the mental health needs of our patients during COVID-19.
13. I am proud that my pharmacy has been able to offer the Bloom Program during COVID-19.

FIGURE 3 Pharmacists' ($N = 50$) ratings on mental health care collaboration, provider access and patient impacts (e.g., referrals) because of the COVID-19 pandemic



1. Collaborating with other Bloom Program pharmacies has increased during COVID-19.
2. Referrals to the Bloom Program from outside of our pharmacy have increased during COVID-19.
3. Bloom Program patients' adherence to medications has become more of an issue during COVID-19.
4. I have been providing more mental health support and resources to Bloom Program patients during COVID-19.
5. I have referred Bloom Program patients to mental health services and resources during COVID-19.
6. I have been providing more mental health support and resources to non-Bloom Program patients during COVID-19.
7. Collaborating with mental health and addictions service providers has been more challenging because of COVID-19.
8. Collaborating with other primary care providers has been more challenging because of COVID-19.
9. Patient access to mental health and addictions services has been negatively affected by COVID-19.
10. Access to primary health care services has been negatively affected by COVID-19 for patients living with mental illness and addictions.

Bloom Program (90%) (Figure 2). One pharmacist described increasing services: "We have offered the service to more patients." A pharmacy assistant noted, "It feels good to be able to offer this service even if it's from a distance."

Bloom pharmacists' experiences with collaboration, referrals and providing mental health care

Pharmacists indicated that they referred Bloom Program patients to mental health services and resources during the pandemic and increased their mental health support of non-Bloom Program patients (Figure 3). A pharmacist unable to enroll people in Bloom still provided support: "With the increased demand for prescriptions, it was difficult to enroll new Bloom patients while maintaining the fundamental pharmacist duties, as our store was in teams at the time. There was an increase of antidepressants prescribed at this time, so I made sure that these patients knew I was available to them for any questions even though they were not enrolled in the program."

Participants broadly agreed that collaboration with primary care ($n = 41$, 82%) and mental health and addiction service providers ($n = 40$, 80%) was more challenging. Patient access to mental health and addictions services and primary health care services was perceived to be negatively affected by 90% ($n = 45$) and 92% ($n = 46$) of pharmacists, respectively (Figure 3). Pharmacists echoed concerns regarding access and quality versus usual in-person care: "Lack of access to family physicians. Virtual care is not as effective in my opinion as face-to-face care" (pharmacist) and "Not actually seeing their prescribers

. . . important things that are missed when you speak over the phone, versus in person" (pharmacist). Another pharmacist identified implications for the pharmacist's role and workload as a result of changes in access to other health care providers: "The most important change for our patients was a switch to virtual care and access to care. Because of this, many patients relied on pharmacies and pharmacists for immediate care and for communication with primary health care providers." Some noted positives in maintaining pharmacy team-patient relationships when other services changed: "More involved in their care as their access to the pharmacy remained the same when access to physicians decreased" (pharmacist). An additional benefit highlighted was expanding scope: "We've fully embraced the expanded scope of pharmacist practice . . . with prescription renewals in scenarios where we may have been more hesitant prior to the onset of the pandemic" (pharmacist).

Discussion

Pharmacy-based mental health services, such as those in the Bloom Program, are perceived to be essential, which explains why only a small proportion of respondents temporarily reduced Bloom Program services during the COVID-19 pandemic. Community pharmacists in England participating in a qualitative study and who were caring for special populations (e.g., dementia) during the pandemic have similarly reported service trade-offs.[19] Teams worked overtime and many had to discontinue routine dispensing services such as supplying adherence aids (e.g., Dosettes or blister packs). In the Netherlands, survey results from 215 pharmacy team members indicated that many (56%) community pharmacies temporarily stopped providing medication reviews. Pharmacy teams in our survey also reported the need to offer Bloom-related services to non-Bloom Program patients, despite capacity challenges. This, in part, demonstrates concern for mental health care needs of communities. Pharmacy teams from the Netherlands similarly expressed doubts about pharmaceutical care quality for "vulnerable patients."[20] Bloom Program pharmacies also responded flexibly to COVID-19 pandemic challenges (e.g., limited in-person contact) and provided care through other mechanisms (e.g., telephone). Although evidence has existed to support such practices,[21] the pandemic forced use of these methods and, based on our respondents, has allowed continuity of care for Bloom Program patients.

It has been suggested by other scholars that pharmacies are underutilized during public health crises and can undertake added roles and responsibilities to help manage the burden affecting other areas of the health care system (e.g., primary care, urgent and emergent care).[22] However, it may be imprudent to assume that pharmacies can reasonably adapt to expanded responsibilities without fully understanding the pandemic's direct impacts on existing pharmacy roles (e.g., ensuring access to medications) and pharmacy teams' mental well-being. For example, global drug shortages[23] are amplified and the unpredictability of supply causes stress and increased workload, but these impacts on pharmacy teams are often not recognized. In Nova Scotia, 30-day supply limits were introduced to protect supply.[24] In our survey, 88% and 70% of respondents indicated that their ability to perform their role in the pharmacy was negatively affected by medication shortages and the 30-day medication supply policy, respectively. Such changes are often met with public dissatisfaction and may have fueled pandemic-related, inappropriate behaviours towards pharmacy teams (e.g., abuse, violence) by some patients.[25]

A national survey conducted by the Canadian Pharmacists Association in April 2020[7] indicated that many (73%) of the 1654 respondents reported an increase in harassment and verbal and other forms of abuse during the initial wave of the pandemic. Many (62% and 42%, respectively) were very or extremely concerned about their safety and the safety of pharmacy staff and their mental health. Respondents to our survey reported negative impacts on mental health, stress and anxiety about being in the workplace and issues with workload related to increasing prescription demands. They reported being "fatigued," "burned out" and "needing help." Work and other research have commenced to describe the potential impacts of the pandemic on pharmacy team mental health and the overall profession in areas such as stress, anxieties and burnout.[9,26-29] However, a comprehensive explication of the impact on the pharmacy workforce in Canada may not be fully feasible as the pandemic continues to evolve across the country. The International Pharmaceutical Federation (FIP) emphasizes the need for pharmacy practice research to prioritize pharmacy workforce and quality of work-life issues, safety of pharmacy personnel and resilience and other characteristics that will help practitioners in crises and pandemics.[30]

Another significant issue with service reduction by other providers during the pandemic is the decrease in access for both patients and pharmacy teams. There were limited collaborative opportunities with mental health and addictions specialists and primary health care providers. This limits the support, guidance and mutual knowledge exchange with these essential providers within the circle of care. From our survey, pharmacy teams filled evolving gaps in care, provided continuity and helped patients address health needs. As the first point of contact, teams often did what was necessary with limited access and collaborative opportunities.

Generally, information on community pharmacy teams' experiences, such as those of our respondents, during the pandemic remains limited on various issues. As the pandemic and research in this area evolves, exploration of the impacts on health care team functioning, including aspects such as team mental health and on patient outcomes is required before pharmacy teams assume more responsibilities.

Conclusion

Bloom Program services were perceived to be essential for Bloom Program patients and pharmacy teams felt

better prepared, as a result of offering the program, to meet the increased mental health care needs of all patients during the pandemic. Program adjustments, such as temporary cessation or more telephone use, were made to cope with COVID-19-related changes and pharmacy teams were challenged to perform essential duties. Generally, significant challenges occurred in accessing other providers. More research on pandemic-related impacts on pharmacy teams is warranted. ■

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References

1. World Health Organization. *Timeline: WHO's COVID-19 response*. Available: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/interactive-timeline (accessed Feb. 26, 2021).

2. Qiu J, Shen B, Zhao M, Wang Z, Xie B, Xu Y. A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: implications and policy recommendations. *Gen Psych*. 2020;33(2):e100213. doi:10.1136/gpsych-2020-100213

3. Moreno C, Wykes T, Galderisi S, et al. How mental health care should change as a consequence of the COVID-19 pandemic. *Lancet Psychiatry* 2020;7(9):813-824. doi:10.1016/S2215-0366(20)30307-2

4. The Centre for Addiction and Mental Health. *COVID-19 National Survey Dashboard*. Available: https://www.camh.ca/en/health-info/mental-health-and-covid-19/covid-19-national-survey (accessed Apr. 1, 2021).

5. Royal Pharmaceutical Society. *The role of pharmacy in mental health and wellbeing: COVID-19 and beyond*. Available: https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Coronavirus/Pharmacy%20role%20in%20mental%20health%20and%20wellbeing-COVID-19%20and%20beyond%20WEB.pdf?ver=2020-08-26-155911-500 (accessed Sept. 15, 2020).

6. Elbeddini A, Wen CX, Tayefehchamani Y, To A. Mental health issues impacting pharmacists during COVID-19. *J Pharm Policy Pract* 2020;13. doi:10.1186/s40545-020-00252-0

7. Canadian Pharmacists Association. *National Survey of Community Pharmacists and Practice Challenges during COVID-19*. Available: https://www.pharmacists.ca/cpha-ca/assets/File/cpha-on-the-issues/Infographic_National_Survey_COVID.pdf (accessed Apr. 1, 2021).

8. Zaidi STR, Hasan SS. Personal protective practices and pharmacy services delivery by community pharmacists during COVID-19 pandemic: results from a national survey. *Res Soc Admin Pharm* 2021;17(1):1832-1837. doi:10.1016/j.sapharm.2020.07.006

9. Austin Z, Gregory P. Resilience in the time of pandemic: the experience of community pharmacists during COVID-19. *Res Soc Admin Pharm* 2021;17(1):1867-1875. doi:10.1016/j.sapharm.2020.05.027

10. The Bloom Program. Available: http://bloomprogram.ca/ (accessed Apr. 1, 2021)

11. Murphy AL, Gardner DM, Jacobs LM. Patient care activities by community pharmacists in a capitation funding model mental health and addictions program. *BMC Psychiatry* 2018;18(1):192-193. doi:10.1186/s12888-018-1746-3

12. Haslam L, Gardner DM, Murphy AL. A retrospective analysis of patient care activities in a community pharmacy mental illness and addictions program. *Res Social Adm Pharm* 2020;16(4):522-528. doi:10.1016/j.sapharm.2019.07.003

13. Murphy AL, Gardner DM, Jacobs LM. The patient experience in a community pharmacy mental illness and addictions program. *Can Pharm J (Ott)* 2019;152(3):186-192. doi:10.1177/1715163519839424

14. Mitchell R, Ogunremi T, Astrakianakis G, et al. Impact of the 2009 influenza A (H1N1) pandemic on Canadian health care workers: a survey on vaccination, illness, absenteeism and personal protective equipment. *Am J Infect Control* 2012;40(7):611-616. doi:10.1016/j.ajic.2012.01.011

15. Butsashvili M, Triner W, Kamkamidze G, Kajaia M, McNutt L-A. Knowledge and anticipated behaviour of health-care workers in response to an outbreak of pandemic influenza in Georgia. *World Hosp Health Serv* 2008;44(2):24-26.

16. Nickell LA, Crighton EJ, Tracy CS, et al. Psychosocial effects of SARS on hospital staff: survey of a large tertiary care institution. *CMAJ* 2004;170(5):793-798. doi:10.1503/cmaj.1031077

17. Sekhon M, Cartwright M, Francis JJ. Acceptability of healthcare interventions: an overview of reviews and development of a theoretical framework. *BMC Health Serv Res* 2017;17(1):88-017-2031-2038. doi:10.1186/s12913-017-2031-8

18. Cane J, O'Connor D, Michie S. Validation of the theoretical domains framework for use in behaviour change and implementation research. *Implement Sci* 2012;7:37-37. doi:10.1186/1748-5908-7-37

19. Lim RHM, Shalhoub R, Sridharan BK. The experiences of the community pharmacy team in supporting people with dementia and family carers with medication management during the COVID-19 pandemic. *Res Soc Admin Pharm* 2021;17(1):1825-1831. doi:10.1016/j.sapharm.2020.10.005

20. Koster ES, Philbert D, Bouvy ML. Impact of the COVID-19 epidemic on the provision of pharmaceutical care in community pharmacies. *Research in Social and Administrative Pharmacy*. 2021;17(1): 2002-2004. doi:10.1016/j.sapharm.2020.07.001

21. Niznik JD, He H, Kane-Gill SL. Impact of clinical pharmacist services delivered via telemedicine in the outpatient or ambulatory care setting: a systematic review. *Res Social Adm Pharm* 2018;14(8):707-717. doi:10.1016/j.sapharm.2017.10.011

22. Cadogan CA, Hughes CM. On the frontline against COVID-19: community pharmacists' contribution during a public health crisis. *Res Soc Admin Pharm* 2021;17(1):2032-2035. doi:10.1016/j.sapharm.2020.03.015

23. Cameron EE, Bushell M-JA. Analysis of drug shortages across two countries during pre-pandemic and pandemic times. *Res Soc Admin Pharm* 2021;17(9):1570-1573. doi:10.1016/j.sapharm.2020.12.001

24. Pharmacy Association of Nova Scotia. *Nova Scotia Pharmacies Limiting Prescription Fills to a 30-Day Supply*. Available: https://pans.ns.ca/pharmacy-professionals/news/nova-scotia-pharmacies-limiting-prescription-fills-30-day-supply (accessed Mar. 3, 2021).

25. Visacri MB, Figueiredo IV, Lima T de M. Role of pharmacist during the COVID-19 pandemic: a scoping review. *Res Soc Admin Pharm* 2021;17(1):1799-1806.

26. Implications of COVID-19 for the Mental Health of Pharmacists. Available: https://www.uspharmacist.com/article/implications-of-covid19-for-the-mental-health-of-pharmacists (accessed Sept. 20, 2021.)

27. Bookwalter CM. *Challenges in Community Pharmacy During COVID-19: The Perfect Storm for Personnel Burnout*. Available: https://www.uspharmacist.com/article/challenges-in-community-pharmacy-during-covid19-the-perfect-storm-for-personnel-burnout (accessed Sept. 20, 2021).

28. Jones AM, Clark JS, Mohammad RA. Burnout and secondary traumatic stress in health-system pharmacists during the COVID-19 pandemic. *Am J Health Syst Pharm* 2021;78(9):818-824.

29. Canadian Healthcare Network. *Easing the burden—how pharmacists are supporting a depleted healthcare system at the cost of their own wellness*. Available: https://www.canadianhealthcarenetwork.ca/easing-burden-how-pharmacists-are-supporting-depleted-healthcare-system-cost-their-own-wellness (accessed Sept. 20, 2021).

30. Dawoud D, Chen AMH, Rossing CV, et al. Pharmacy practice research priorities during the COVID-19 pandemic: recommendations of a panel of experts convened by FIP Pharmacy Practice Research Special Interest Group. *Res Social Adm Pharm* 2021;17(1):1903-1907.