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Original Article

Understanding Patient Perspectives on Specialized, Longitudinal, Postpartum, Cardiovascular Risk-Reduction Clinics

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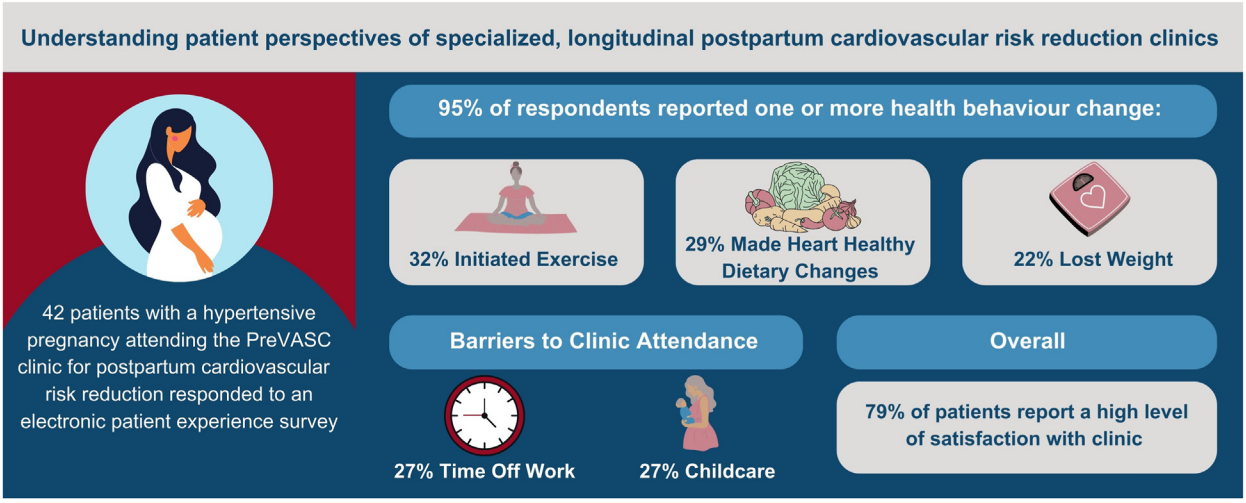

ABSTRACT

Background: Females who experience hypertensive disorders of pregnancy (HDP) have an increased lifelong risk of cardiovascular disease. Thus, Canadian clinical practice guidelines recommend cardiovascular risk reduction follow-up after a patient has HDP. This study examined the experiences of patients with HDP who attended a specialized, longitudinal general internal medicine postpartum cardiovascular risk reduction clinic called PreVASC. PreVASC focuses on comprehensive cardiovascular risk reduction through cardiovascular risk factor screening and management tailored specifically for female patients after they have HDP.

Methods: This multimethod study examined the experiences of female patients with HDP via the following: (i) a quantitative survey (summarized with descriptive statistics); (ii) semistructured qualitative patient phone interviews (results grouped thematically); and (iii) triangulation of qualitative themes with quantitative survey results.

RÉSUMÉ

Contexte : Les femmes qui sont atteintes de troubles hypertensifs de la grossesse (THG) présentent un risque accru de maladie cardiovasculaire durant leur vie. Par conséquent, les lignes directrices canadiennes de pratique clinique recommandent un suivi pour la réduction du risque cardiovasculaire après la survenue d'un THG. Cette étude visait à examiner l'expérience des patientes qui ont été atteintes de THG et qui ont fréquenté l'une des cliniques de médecine interne spécialisées dans la réduction du risque cardiovasculaire post-partum et offrant une prise en charge longitudinale (PreVASC). Les cliniques PreVASC se concentrent sur la réduction des risques cardiovasculaires globaux par la détection des facteurs de risque cardiovasculaire et une prise en charge spécialement adaptée pour les femmes qui ont subi un THG.

Méthodologie : Cette étude visait à examiner l'expérience des femmes atteintes d'un THG en faisant appel à diverses méthodes : i)

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Results: Overall, 37% of eligible clinic patients (42 of 115) participated; 79% of participants (n = 33) reported being "very satisfied" with the PreVASC clinic's specialized longitudinal model of care, and 95% (n = 40) reported making at least one preventive health behaviour change after receiving individualized counselling on cardiovascular risk reduction. Qualitative results found improvements in patient-reported cardiovascular health knowledge, health behaviours, and health-related anxiety. A preference for in-person vs phone clinic visits was reported by participants.

Conclusions: An in-person, general internal medicine specialist–led, longitudinal model of cardiovascular disease preventive care focused specifically on cardiovascular risk reduction after HDP had positive impacts on patient experience, health knowledge, and preventive health behaviours. This novel knowledge on patient preferences for a longitudinal, specialized model of care advances cardiovascular risk reduction tailored specifically for high-risk people after HDP.

Résultats : Globalement, 37 % des patientes admissibles (42 sur 115) ont participé à l'étude; 79 % des participantes (n = 33) ont déclaré être « très satisfaites » du modèle de soins longitudinal spécialisé des cliniques PreVASC, et 95 % (n = 40) ont déclaré avoir adopté au moins un comportement préventif pour leur santé après avoir reçu des conseils personnalisés sur la réduction du risque cardiovasculaire. Les résultats qualitatifs obtenus auprès des patientes font état d'une amélioration des connaissances sur la santé cardiovasculaire, les comportements sains et l'anxiété liée à la santé. Les participantes ont dit préférer les visites cliniques en personne aux consultations par téléphone.

Conclusions : L'adoption d'un modèle longitudinal de médecine interne comprenant des rencontres avec des spécialistes pour prévenir les maladies cardiovasculaires, en particulier réduire le risque cardiovasculaire après un THG a eu des effets positifs chez les patientes en ce qui concerne l'expérience, les connaissances en matière de santé et les comportements à adopter pour prévenir les problèmes de santé. Ces nouvelles connaissances sur les préférences des patientes à l'égard de soins longitudinaux spécialisés représentent un pas en avant dans la mise en place d'une approche personnalisée de réduction du risque cardiovasculaire pour les personnes présentant un risque élevé après un THG.

Lay Summary

Women with high blood pressure in pregnancy have a 2-5 times higher lifelong risk of experiencing heart disease. Specialized clinics in Canada focus on supporting these women to reduce their risks of heart disease later in life. Women who attended a Calgary-based clinic reported high levels of satisfaction with their specialized care. An important finding is that 95% of women reported making positive changes to their exercise, medications, and/or diet that are known to prevent heart disease.

Cardiovascular diseases (CVDs) remain a leading cause of death for Canadian women, despite a large proportion of CVDs being preventable through early identification and management of traditional cardiovascular risk factors (ie, hypertension, dyslipidemia, dysglycemia, etc.).[1] In addition, recognition is emerging of the importance of female-specific cardiovascular risk factors (ie, reproductive events, early menopause, etc.) over the lifespan that also are associated with increased risks of CVD.[2-5] The hypertensive disorders of pregnancy (HDP) are a common female-specific cardiovascular risk factor (~5%-10% of all pregnancies in Canada) that is associated with a 2-4 times higher lifelong risk of CVD.[4,6-8] An Important finding is that female patients who experience HDP have high rates of premature cardiovascular events, before the age of 50 years.[9-12] Although research actively examines mechanisms linking the HDP with future CVD, to identify targeted interventions to modify the risks of CVD after HDP, strong evidence indicates that female patients with HDP develop traditional atherosclerotic risk factors early in life (commonly from preconception to 5 years after delivery) that may accelerate the progression to CVD.[10,13-23] Accordingly, CVD prevention after a patient has HDP is centred around early CVD risk factor identification and management through CVD preventive health behaviours (physical activity, nutrition, lactation, sleep, smoking cessation, etc.) as first-line, and pharmacotherapy as second-line therapy.

The early postpartum period provides an opportunity for cardiovascular risk reduction through the following: individualized counselling on CVD risk; screening and identification of modifiable CVD risk factors, such as hypertension, dysglycemia, dyslipidemia, obesity, and metabolic syndrome; education on evidence-based CVD risk reduction interventions (ie, health behaviours and pharmacotherapy when indicated); and preconception counselling on HDP risk reduction in future pregnancies.[9-12,24-27] Emerging evidence supports the effectiveness of postpartum follow-up focused on CVD risk factor screening and health behaviour counselling on short-term measures of cardiovascular health (significant reductions in blood pressure, weight, and patient knowledge of CVD health), although the long-term impacts of these early health promotion interventions remain under study.[22,28,29] Further, only limited data are available to inform the implementation of CVD preventive care into routine clinical practice to reach female patients after they have HDP.[30,31] Thus, to address these important clinical gaps, several

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See page 172 for disclosure information.

international health groups have supported calls-to-action to advance the evidence on cardiovascular risk reduction after HDP and other common pregnancy events, such as gestational diabetes and preterm delivery.[23-27]

Canada is a leader in postpartum CVD preventive care, as several centres have established dedicated postpartum clinics tailored specifically for patients who experienced an HDP, with the goal of reducing long-term CVD through early identification and management of CVD risk factors.[28] The Canadian clinics vary in terms of the following factors: target patient populations (i.e., pregnancy-related conditions of HDP, gestational diabetes, preterm delivery, etc.); type of healthcare providers (ie, family physician, general and/or obstetric internal medicine specialists, obstetric care providers, and other medical specialists); and follow-up approaches (one-time transition consult vs regular follow-up every 3-12 months). Data on the effectiveness of these clinics in their impact on important cardiovascular health outcomes, health services utilization, and costs are in the early stages, given both the relatively long duration of time for CVD events to occur after pregnancy and the large sample size needed to demonstrate clear benefits of early cardiovascular preventive care. In the short-term, in addition to improvements in clinical measures of cardiovascular health (eg, blood pressure, weight, lipids, etc.), an important foundational step is to understand the patient perspectives on CVD preventive care after HDP. Patient perspectives are of particular importance as a means to address gender-related barriers to CVD preventive care in the early postpartum period. Further, patient satisfaction has been associated with improvements in both self-reported and objective health outcomes, care-plan adherence, and resource utilization. Thus, patient perspectives may be associated with early surrogate markers of clinical effectiveness in this high-risk population of female patients after they have HDP.[32,33]

Study Objective

The objective of this study was to examine the experiences of patients who attended a care model that included a general internal medicine (GIM) specialist, and longitudinal, postpartum CVD risk reduction focused on comprehensive CVD risk factor screening and management for female patients after HDP.

Study Methodology

The post-preeclampsia vascular risk-reduction (PreVASC) clinics model of care

The PreVASC clinics, which began in 2013, operate in multiple sites within Calgary, Alberta, Canada. Patients with a diagnosis of HDP are assessed by a GIM specialist at 3-6 months after delivery, and then regularly (every 6-12 months), for modifiable CVD risk factor (ie, hypertension, dysglycemia, dyslipidemia, obesity, kidney dysfunction, and smoking status) identification and management. First-line management centres around physician-led counselling on health behaviour modifications (eg, physical activity, nutrition, and smoking cessation). Given that no interdisciplinary team member support is available in the clinics, referrals are made on an individualized basis to community resources, where available, to support health behaviour modifications. Second-line management for CVD risk factors that remain above the targets recommended by Canadian clinical practice guidelines after health behaviour modification includes pharmacologic interventions. Patients provide informed consent to be contacted for future research at the initial consult. The costs of clinic visits are covered by a single-payer provincial health insurance, whereas the costs of medications, if required, are paid by the patient or their private health insurance.

Overall study design

A multiple-methods study was conducted using an electronic survey, followed by semistructured phone interviews, to examine the perspectives of patients with HDP who attended the PreVASC clinics. The study design followed the standards for reporting qualitative research.[34] Ethics approval was obtained from the University of Calgary Conjoint Health Research Ethics Board (REB19-0724).

Participants and recruitment

Participants included female patients who met the following criteria: (i) attended at least one PreVASC clinic appointment between January 2013 and February 2021 and provided consent to be contacted for future research; (ii) could communicate in English; and (iii) provided informed consent to participate in the current study. To maintain patient confidentiality from their care team, identifying information was removed, and clinicians involved in the PreVASC clinics were not involved in the participant interviews.

Data collection

Electronic surveys were distributed between February and April 2021 via e-mail and were administered using the Qualtrics (Provo, UT) electronic survey platform. The electronic survey addressed the following 8 areas of the patient experience (Table 1): number and frequency of clinic appointments; satisfaction with components of the clinics (11 items on a 5-point Likert scale, on which 1 meant "very dissatisfied," and 5 meant "very satisfied"); patient-reported benefits of clinic participation; self-reported health behaviour changes resulting from clinic visits; medication changes; barriers to attending the PreVASC clinics; suggestions for improvements to the PreVASC clinic model; and general perspectives.

Phone interviews were conducted by a trained researcher (K.M.N.) between February and April 2021, using a semi-structured interview guide. Interview questions were tested in a trial interview (conducted by K.M.N. and I.W.Y.M.), to optimize question clarity and interview flow. Questions explored the following: patient experiences with the PreVASC clinics: satisfaction and dissatisfaction; participants' understanding of reasons for consultation; health information provided; management changes and health behaviour changes as a result of clinic visits; clinic format; communication of health information with the PreVASC care team; and barriers to clinic attendance. Preliminary thematic analysis was performed after each interview, and data were collected until a point of saturation of themes was reached and no new themes were arising. Interview transcripts and field notes were anonymized and transcribed by one researcher (K.M.N.). Interviews were not audio recorded, owing to concerns regarding

Table 1. Patient satisfaction with the post-preeclampsia vascular risk-reduction (PreVASC) clinics' model of care

Clinic feature	Very dissatisfied	Somewhat dissatisfied	Neutral	Somewhat satisfied	Very satisfied	Mean satisfaction score (SD)
Education						
1. Educating me on how I can prevent heart disease in myself	1 (2)	0	1 (2)	7 (17)	33 (79)	4.69 (0.74)
2. Educating me on why I have been referred to this clinic	1 (2)	0	2 (5)	3 (7)	36 (86)	4.74 (0.76)
Clinic process						
3. The duration (length) of the visit	1 (2)	0	2 (5)	3 (7)	36 (86)	4.74 (0.76)
4. The follow-up interval between my visits	1 (2)	2 (5)	1 (2)	9 (21)	29 (69)	4.50 (0.93)
5. Comprehensiveness of the visits	1 (2)	0	4 (10)	7 (17)	30 (71)	4.55 (0.85)
Communication						
6. Communication about the potential risks of my pregnancy condition on future health	2 (5)	0	3 (7)	13 (31)	24 (57)	4.36 (0.97)
7. Communication between my family doctor and my PreVASC doctor	1 (2)	2 (5)	16 (38)	7 (17)	16 (38)	3.83 (1.07)
8. Communication about my current heath with my PreVASC doctor	1 (2)	1 (2)	4 (10)	7 (17)	29 (69)	4.48 (0.93)
Clinic experience						
9. My relationship with my PreVASC doctor	1 (2)	0	2 (5)	3 (7)	36 (86)	4.74 (0.76)
10. Value added beyond my family doctors' care	1 (2)	0	5 (12)	3 (7)	33 (79)	4.60 (0.87)
11. Overall experience with the clinic	1 (2)	1 (2)	1 (2)	6 (14)	33 (79)	4.64 (0.84)

Values are n (%), unless otherwise indicated.
SD, standard deviation.

data security given the potentially sensitive nature of the content.

Data analysis

Electronic survey responses were analyzed using standard descriptive statistics. Open-text responses were grouped categorically and analyzed by theme. Qualitatitive phone interview transcripts and field notes were read independentaly by 2 researchers who were not involved in PreVASC clinical care (K.M.N. and I.W.Y.M.), and they were analyzed using thematic analysis. Both members independently, iteratively, and inductively coded major themes by first generating categories and subcategories of data. Discrepancies in data coding were resolved by discussion and data recoding. The impact of personal biases and assumptions on coding and themes were explored and examined. Final themes were reviewed by all investigators. Results from the electronic surveys were triangulated with the qualitative phone-interview responses.

Results

Of the 115 eligible patients who attended at least one PreVASC clinic visit between January 2013 and February 2021 and consented to be contacted for future research, 34 (29.6%) were lost to follow-up, and 7 (6.1%) declined participation. In total, of the 74 patients who agreed to participate, provided informed consent electronically (ie, 37% of the overall clinic cohort), and were sent the survey, 42 completed the electronic survey, for a response rate of 56.7%. Eleven patients (15%) participated in the semistructured phone interview.

Electronic survey

Most survey respondents reported 3 or more clinic visits (n = 25; 60%). In terms of patient satisfaction (Table 1), 79% (n = 33) reported being "very satisfied" with their overall experience with the PreVASC clinics. Over half of the participants (n = 24; 57%) were "very satisfied" with counselling on HDP and future health risks, and 38% (n = 16) were "neutral" or only "somewhat satisfied". A total of 86% of participants (n = 36) reported being "very satisfied" with their relationship with the PreVASC specialist provider. Patient satisfaction regarding communication of the PreVASC clinic healthcare provider with the participant's family physician had a lower score, with 55% of participants (n = 23) reporting being "neutral" or "somewhat satisfied."

From a CVD risk factor management perspective (Table 2; Fig. 1), 95% of participants (n = 40) in the electronic survey reported a change in at least one health behaviour that was attributed to PreVASC clinic attendance. Two respondents (5%) reported receiving advice on anxiety management. Of the 31% of patients (n = 13) who reported medication changes, most noted initiation of antihypertensive or lipid-lowering therapy, or titration of the doses of these medications. Three patients (7%) reported initiation of vitamins, including prenatal vitamins and vitamin D for a subsequent pregnancy.

Commonly reported barriers to attending in-person clinic visits included the following: inadequate time for appointments (n = 11; 27%) and limited access to childcare (n = 11; 27%; Table 3). Three participants (7%) described work-related barriers to arranging time off, and 3 (7%) noted COVID-19-related restrictions as additional barriers to accessing in-person CVD preventive care. Overall, 36% of participants (n = 15) reported no barriers to attending the PreVASC clinics in person.

When asked about the model of care, 86% of participants (n = 36) reported that they would not recommend any changes to the PreVASC clinic's longitudinal model of care. Suggested improvements included an increased frequency of visits (a preference for every 6 months instead of annually) and more comprehensive education on future health risks after HDP (eg, kidney disease, etc.).

Additional general comments from participants yielded consistent statements of patient satisfaction with the clinic model and strong relationships with their PreVASC care provider. Examples are as follows: "The PreVASC clinic goes beyond the general care offered by the family doctor. I feel much safer regarding my heart health while being annually watched by a specialized physician"; "My doctor is very calming and makes me feel like I'm doing a good job. She reassures me. Just seeing her makes me feel better."

Phone interviews

Eleven phone interviews (lasting between 12 and 30 minutes) were completed to achieve theme saturation. The following 6 themes were identified: sources of patient satisfaction with care provision; impacts of care; recommended changes to clinical model of care; barriers to care; COVID-19 impacts on clinical care; and the role of other healthcare providers. These findings are summarized in Table 4.

Sources of patient satisfaction with care provision

Patients generally reported being very satisfied with the care received from the PreVASC clinics. In particular, participants emphasized their perceived importance of being managed by specialists with expertise in monitoring the cardiovascular health of people after they have HDP. One participant expressed the following: "I'm not sure that my family doctor would know the background that preeclampsia is this important and follow me this closely as a young, otherwise healthy person." Important to note is that participants reported all elements of the clinic structure to be useful to them.

Impacts of CVD preventive care

Participants reported that the PreVASC clinic's approach to counselling for comprehensive cardiovascular risk factor management influenced their decision to initiate health behaviour modifications. One patient said "I started eating better, being more aware of whole foods, more veggies and fruit, less processed foods." Another participant reported that "my exercise is unchanged, but I'm doing it for a different reason. It was more a weight management [aesthetic] tool previously rather than for my health."

Many participants described that the individualized health information obtained by attending the PreVASC clinic improved their cardiovascular health knowledge, as they were not aware of the increased CVD risks after having HDP, prior to their consultation. For example, one patient reported the following: "From what I understand, I had high blood pressure post-pregnancy, which was termed as post-partum preeclampsia. I now know [my referral to the PreVASC clinic] was for long-term follow-up for helping prevent heart attacks, strokes and other conditions that I'm at risk for because of my preeclampsia."

An additional theme that was reported by several participants was having lower levels of health-related stress and anxiety after the clinic visits. Participants described feeling reassured and cared for by their physicians and care team, as reflected in the following comment: "Going to the clinic reduced my anxiety knowing that other people were going to the clinic, and I wasn't alone in my care." This theme also may be related to the patient-reported strong therapeutic relationships with their PreVASC care provider due to the longitudinal model of follow-up, and the comprehensiveness of addressing all cardiovascular risk factors at one visit by a GIM specialist.

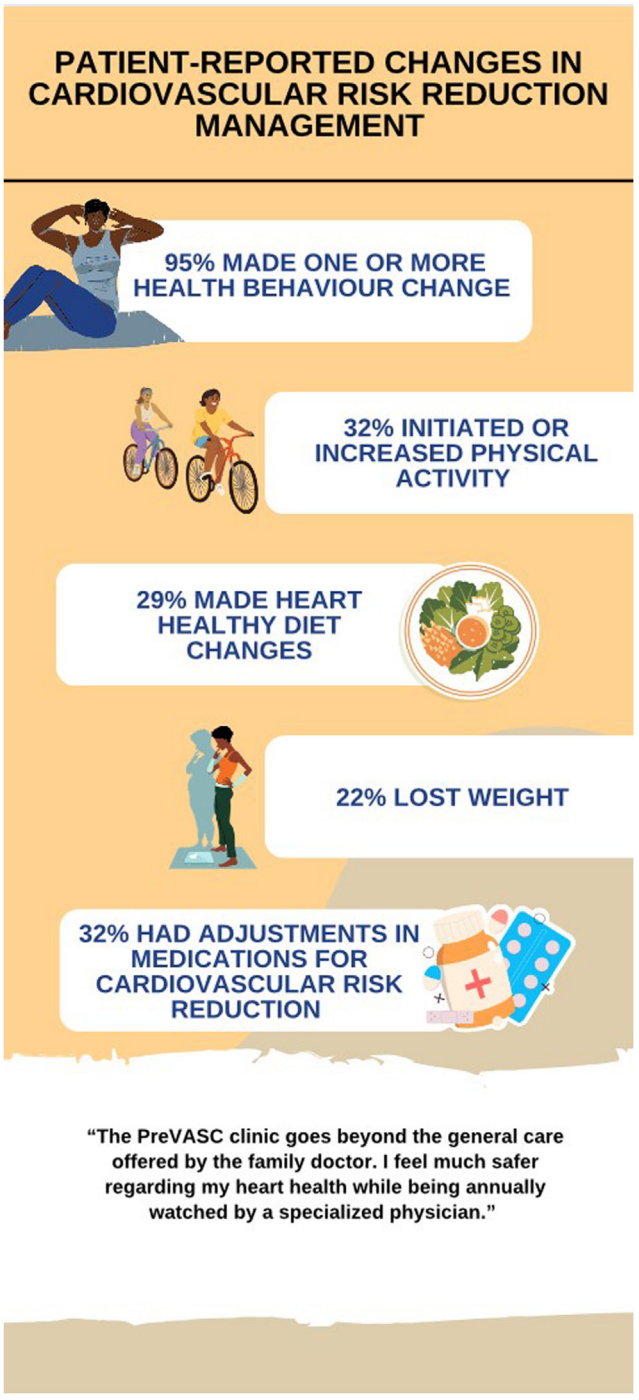

Figure 1. Patient-reported changes in cardiovascular risk reduction management following post-preeclampsia vascular risk reduction (PreVASC) clinic attendance.

Recommended changes to PreVASC clinics' model of care, and barriers to in-person attendance

Overall, patients did not recommended changes to the PreVASC model of care, other than an increase in the

Table 2. Patient-reported changes in cardiovascular health behaviours and medication management following post-preeclampsia vascular risk reduction (PreVASC) clinic visits

Management change	n (%) N = 44
Weight loss	9 (22)
Exercise initiation or increase	13 (32)
Heart healthy—diet initiation	12 (29)
Other health behaviour change	5 (12)
No health behaviour change made	2 (5)
Medication change (dose or drug)	13 (32)

frequency of clinic visits from annually to every 6 months. Most patients in the phone interviews (7; 64%) did not identify specific barriers to attending clinics during the phone interviews. However, 4 participants (36%) identified the physical distance of the clinics from their home, parking costs, access to childcare, and time off work as barriers to in-person care, which are commonly reported gender-related barriers to care of people after they have HDP who have young children.[11]

Role of other healthcare providers

All but one participant reported that their family doctor had received documentation from the PreVASC clinics' team. One participant described that the PreVASC clinics' documentation had improved preventive care received from their primary care provider, as follows: "They used to be less involved in my care during my pregnancies, but now they are really following up on the notes and monitoring for new instructions."

Impacts of COVID-19 on the PreVASC clinics' model of care

Our study began prior to the COVID-19 pandemic and therefore initially was not designed to evaluate the impact of COVID-19 on postpartum CVD preventive care. However, due to the pandemic, some clinic visits were changed to phone appointments. Despite reporting the above barriers to attending in-person clinic visits, most participants reported having a preference for an in-person model of care, compared with phone and/or virtual visits. Participants reported having an interest in phone and/or virtual appointments when their health status was considered "stable"; however, when management changes were made, in-person visits were preferred by people after they had HDP. Other patients (5; 45%) reported a preference for the option for self-selection of the type of clinic visit (ie, in-person vs phone and/or virtual).

Table 3. Patient-reported barriers to attending in-person clinic visits for cardiovascular preventive care

Barrier	n (%) N = 44
Time	11 (27)
Childcare	11 (27)
Other	7 (16)
Work concerns (e.g., paid time off, schedule)	3 (7)
Location of clinics inconvenient	2 (5)
COVID-19 restrictions	3 (7)
Transportation	1 (2)
Finances	0
No reported barriers	15 (35)

Discussion

Since the landmark Canadian study in 2005[21] that found at least a 2-fold increase in premature cardiovascular events in Ontario female patients after they had HDP, the fact that female patients who experience an HDP have a significantly higher lifelong risk of CVD has become increasingly evident. Further, recent studies show that CVD preventive care after HDP is fragmented in North America, and that, after they have HDP, the large majority of patients receive no preventive care.[28,35] In Canada, when care after HDP is provided, evidence demonstrates a lack of standardization and high rates of loss to follow-up and nonattendance to clinic visits.[28,36,37] Thus, to address these gaps in care, postpartum CVD prevention clinics have been established, primarily by GIM specialists with an interest in obstetric medicine, as well as family physicians, obstetric care providers (including maternal fetal medicine specialists), and medical subspecialists (cardiologists, endocrinologists, and nephrologists).[11] Many of these clinics have adapted the model of care of a one-time transition consultation for CVD risk factors and counselling, developed by the MotHERS Clinic in Kingston, Ontario, by providing longitudinal follow-up for ongoing CVD risk reduction by general internists and other vascular specialists.[38]

Studies have shown that the CVD risk for an HDP patient extends well beyond the pregnancy period, with risk increasing for 30 years or more after diagnosis; thus, longitudinal CVD risk factor screening and management may play an important role in reducing these risks.[14,39] This study of the PreVASC clinics' regular interval of follow-up (6 months, then annually) is among the first to describe patient perspectives on a longitudinal model of CVD preventive follow-up that is tailored specifically for patients after they have HDP. An important finding of the study is the high levels of patient satisfaction with this GIM specialist-run longitudinal clinic model, in both the electronic survey and the qualitative interviews. Further, patients developed strong therapeutic relationships with their GIM specialist, and in fact, they requested more frequent follow-up, every 6 months instead of annually. Surprisingly, most participants did not report significant barriers (in particular, financial) to attending in-person clinic visits. Overall, the large majority of the patients described the PreVASC clinic as being beneficial to their overall cardiovascular health and wellness.

One important finding is that the majority of patients reported that they valued and preferred care that was provided by healthcare providers who had expertise in this unique clinical area of CVD prevention after HDP. Although this patient-reported finding may suggest a role for a specialist care provider, it alternatively may highlight gaps in knowledge dissemination regarding CVD risks after HDP that target primary care providers, and the lack of a single Canadian clinical practice guideline that is focused on CVD prevention after HDP, as found in a recent study of interdisciplinary clinicians in Canada.[40] Further, given the high prevalence of HDP in Canada (~5%-10% of all pregnancies), from a health system's perspective, evidence-based risk stratification tools to identify patients with HDP who are at highest risk of

Table 4. Qualitative phone interview results (major themes by category)

Theme	Subthemes
Sources of patient satisfaction with care provision	Overall, patients were satisfied with care
	Longitudinal follow-up / continuity of care
	Specialist care
	Comprehensiveness of care
	Preventative care
	Reproductive counselling (future pregnancy)
	Health behaviour changes (eg, nutrition, physical activity, smoking cessation, etc.)
Impacts of clinical care	Medication initiation and titration (eg, antihypertensives, lipid-lowering therapy, vitamin D)
	Improvement in reported HDP and CVD health knowledge
	Improvement in mental health / anxiety
	Most patients satisfied with current model of care
Patient recommendations for changes to PreVASC clinic's model of care	Patients requested more-frequent monitoring (ie, every 6 mo)
	Patients requested education expansion beyond CVD risk management (eg, kidney disease, etc.)
	Patients requested a formal, centralized referral process to improve access to program
	Shorten the distance to clinic from home
Patient-reported barriers to clinical care	Parking costs
	Childcare not available
	Inadequate paid time off work
	Most patients reported communication with family doctor was adequate
COVID -19 impacts on clinic	Patients value option for face-to-face visit over phone model
	Many appointments moved to phone format in pandemic
	Patients find phone appointment satisfactory when condition is stable and no major management changes are made

CVD, cardiovascular disease; HDP, hypertensive disorders of pregnancy; PreVASC, post-preeclampsia vascular risk reduction.

CVD are needed, to direct limited specialized postpartum CVD prevention clinic resources to those patients most likely to benefit. Until further evidence is generated evaluating different models of care, an important approach is for all clinicians involved with HDP patients' postpartum health journeys to provide individualized CVD risk assessment and counselling during routine clinical care.

An unanticipated finding was that, despite some participants reporting gender-related barriers to in-person care, participants consistently reported a preference for face-to-face visits over virtual (phone or video) visits. This finding aligns with a survey conducted by National Public Radio and Harvard University School of Public Health in 2021, where 64% of US households preferred an in-person to a virtual format for receiving healthcare.[41] Another important patient-reported factor was improvement in health-related anxiety after being seen by a specialist physician. Thus, postpartum CVD preventive care not only improves CVD health outcomes but also may contribute to patient's overall wellness, thereby reducing the impacts of the postpartum mental health disorders commonly experienced by people after they have HDP.[42]

This short-term study found that patients reported improvements in cardiovascular risk factors, such as body mass index, lipids, diabetes control, and hypertension management, as well as improved health behaviours (eg, nutrition and physical activity) associated with a longitudinal model of CVD preventive care. This study is a starting point to inform objective long-term data on cardiovascular health outcomes, health services utilization, and costs associated with different CVD preventive models of care, which is needed to inform specific evidence-based CVD risk factor screening and management strategies (ie, optimal timing of screening tests, thresholds for initiation of therapy, and treatment targets) to apply after patients have HDP.

This new knowledge of patient satisfaction and preferences for a longitudinal model of specialist-led, in-person CVD preventive care informs the implementation of guideline-recommended CVD preventive care to reach other high-risk people after HDP in Canada.[30,31] Although these findings are clinically important, they must take into consideration the limitations inherent to the study's design. The study population of people attending the PreVASC clinic, particularly the exclusion of those who did not speak English, may not be representative of the multiethnic population of people with HDP in Canada, as several ethnicities are known to be risk factors for both HDP and CVD.[43] In addition, the study was limited by the small total number of participants (ie, 42 of 115 [37%] eligible), which may limit the generalizability of the study findings. Further, 60% (25 of 42 participants) attended 3 or more clinic visits, which may represent a group of patients who are highly adherent to postpartum CVD preventive care, as another Alberta postpartum CVD prevention clinic found 25%-50% nonattendance at scheduled in-person visits.[28] Although more research is needed to understand the preferences of patients who do not participate in preventive care, the smaller sample size of patients was at the same time a strength, as it allowed for rich, detailed qualitative data on the patient experience to supplement and reinforce the findings of the electronic survey. An additional strength of the study was the intentional use of qualitative researchers who did not work within the PreVASC clinics to minimize the biases from both participant selection and data interpretation (ie, the coding and interpretation of qualitative data).

Conclusions

Although strong evidence indicates the increased lifelong risk of CVD and CVD risk factors after a patient has HDP, major gaps remain in evidence supporting the impacts of CVD prevention programs tailored specifically for this high-risk population.[11] This study found that clinically important patient-reported short-term benefits (ie, improved patient CVD knowledge, positive health behaviour modifications, enhanced pharmacologic management, and reduced health anxiety) are associated with this longitudinal model of in-person, specialist-led, CVD preventive care focused on comprehensive CVD risk factor screening and management at 6 months after delivery and then annually long-term. Next steps will examine the longer-term impacts on CVD health outcomes, health services utilization, and costs of this longitudinal model of care. This new knowledge, together with data from other Canadian postpartum CVD prevention clinics, will generate the evidence base to inform models of care on the delivery and effectiveness of CVD risk factor screening and management to reach thousands of high-risk female patients, after they have HDP, each year in Canada.[11,44]

Ethics Statement

Ethics approval was provided by the University of Calgary Conjoint Health Research Ethics Board (REB19-0724).

Patient Consent

The authors confirm that patient consent forms have been obtained for this article.

Funding Sources

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Disclosures

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