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## Health care providers' experiences and perceptions participating in a chronic pain telementoring education program: A qualitative study

Jane Zhao <sup>a</sup>, Naima Salemohamed<sup>a,b</sup>, Jennifer Stinson<sup>c,d,e</sup>, Leslie Carlin<sup>a,f</sup>, Emily Seto <sup>b</sup>, Fiona Webster <sup>g</sup>, and Andrea D. Furlan <sup>a,h,i</sup>

<sup>a</sup>ECHO Ontario Chronic Pain and Opioid Stewardship, Toronto Rehabilitation Institute, Ontario, Toronto, Canada; <sup>b</sup>Institute of Health Policy, Management, and Evaluation, University of Toronto, Ontario, Toronto, Canada; <sup>c</sup>Department of Anesthesia and Pain Medicine, The Hospital for Sick Children, University of Toronto, Ontario, Toronto, Canada; <sup>d</sup>Department of Physical Therapy, University of Toronto, Toronto, Ontario, Canada; <sup>e</sup>Arthur and Sonia Labatt Family School of Nursing, Faculty of Health Sciences, Western University, Ontario, London, Canada; <sup>f</sup>Department of Medicine, University of Toronto, Toronto, Ontario, Canada; <sup>g</sup>Department of Child Health Evaluative Sciences, The Hospital for Sick Children, Toronto, Ontario, Canada; <sup>h</sup>Lawrence S. Bloomberg Faculty of Nursing, University of Toronto, Toronto, Ontario, Canada; <sup>i</sup>Institute for Work & Health, Toronto, Ontario, Canada

### ABSTRACT

**Background:** Chronic pain affects one in five Canadians. Frontline health care providers (HCPs) manage the majority of patients with chronic pain yet receive minimal training to do so. The Extension for Community Healthcare Outcomes (ECHO) model™ is an education intervention aimed at HCPs (not patients) to support and improve care in underserved communities. ECHO Ontario Chronic Pain and Opioid Stewardship (ECHO PAIN) is an adaptation of the ECHO model where the program goals are to support and improve chronic pain and opioid management in the province of Ontario, Canada.

**Aims:** This study aimed to investigate the perceptions of HCPs participating in ECHO PAIN.

**Methods:** Thirteen HCPs attending ECHO PAIN participated in in-depth semistructured phone interviews. Resulting data were analyzed through a qualitative descriptive lens.

**Results:** Analysis uncovered four themes: (1) HCPs' motivation for joining ECHO PAIN, (2) interprofessional collaboration through ECHO PAIN, (3) the use of opioids for pain management, and (4) barriers and facilitators to participation and satisfaction in ECHO PAIN. HCPs joined ECHO PAIN because of their struggles managing their complex patients with chronic pain. HCPs also recognized the importance of interprofessional collaboration in pain management and shared examples of integration of different professional approaches in their clinical teams. Opioids for pain management remained a controversial issue, and ECHO served as an opportunity to decrease this knowledge gap. Finally, HCPs described how time constraints, organizational support, and session structure acted as barriers to their participation and satisfaction in the ECHO PAIN program; technology mediated satisfaction.

**Conclusions:** This study was the first in Canada to explore the motivations of HCPs in attending a chronic pain telementoring program as well as to examine the interprofessional effects of participation. HCPs increased their knowledge about management of chronic pain and increased their interprofessional approach.

### RÉSUMÉ

**Contexte:** La douleur chronique touche un Canadien sur cinq. Les prestataires de soins de santé de première ligne prennent en charge la majorité des patients souffrant de douleur chronique, mais reçoivent une formation minimale pour le faire. Le modèle Extension for Community Healthcare Outcomes™ (ECHO) est une intervention éducative destinée aux prestataires de soins de santé (et non aux patients) pour soutenir et améliorer les soins dans les communautés mal desservies. Le programme ECHO Ontario Chronic Pain and Opioid Stewardship (ci-après appelé « ECHO PAIN ») est une adaptation du modèle ECHO dont les objectifs sont de soutenir et d'améliorer la prise en charge de la douleur chronique et la gestion des opioïdes dans la province de l'Ontario, au Canada.

**Objectifs:** Cette étude visait à étudier les perceptions des prestataires de soins de santé participant au programme ECHO PAIN.

**Méthodes:** Treize prestataires de soins de santé participant au programme ECHO PAIN ont participé à des entretiens téléphoniques semi-structurés approfondis. Les données découlant de ces entretiens ont été analysées à l'aide d'une grille descriptive qualitative.

**Résultats:** L'analyse a révélé quatre thèmes : 1) la motivation des prestataires de soins de santé à participer au programme ECHO PAIN ; 2) la collaboration interprofessionnelle dans le cadre du

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**CONTACT** Andrea D. Furlan  [andrea.furlan@uhn.ca](mailto:andrea.furlan@uhn.ca)  Toronto Rehabilitation Institute, University Centre, 550 University Avenue, Room 7-141, Toronto, ON M5G2A2, Canada.

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programme ECHO PAIN ; 3) l'utilisation des opioïdes pour la prise en charge de la douleur et 4) les barrières et les facilitateurs en ce qui en trait à la participation au programme ECHO PAIN et à la satisfaction à l'égard de celui-ci. Les prestataires de soins de santé se sont joints à ECHO PAIN en raison de leurs difficultés à prendre en charge leurs patients complexes souffrant de douleur chronique. Les prestataires de soins de santé ont également reconnu l'importance de la collaboration interprofessionnelle dans la prise en charge de la douleur et ont partagé des exemples d'intégration de différentes approches professionnelles dans leurs équipes cliniques. Les opioïdes pour la prise en charge de la douleur sont demeurés une question controversée, et ECHO a permis de réduire ces lacunes dans les connaissances. Enfin, les prestataires de soins de santé ont décrit comment les contraintes de temps, le soutien organisationnel et la structure des sessions ont constitué des obstacles à leur participation au programme ECHO PAIN et à leur satisfaction à l'égard de celui-ci, tandis que la technologie a favorisé leur satisfaction.

**Conclusions:** Cette étude a été la première au Canada à étudier les motivations des prestataires de soins de santé à participer à un programme de télémentorat sur la douleur chronique, ainsi qu'à examiner les effets interprofessionnels de la participation à ce programme. Les prestataires de soins de santé ont amélioré leurs connaissances sur la prise en charge des patients souffrant de douleur chronique et ont renforcé leur approche interprofessionnelle.

## Introduction

Pain is among the most disabling conditions globally.<sup>1</sup> In Canada, one in five adults is affected by moderate to severe chronic pain.<sup>2</sup> Chronic pain is costly, accounting for more health care utilization than any other condition.<sup>3–5</sup> Frontline health care providers (HCPs) manage the majority of patients with chronic pain yet receive minimal training to do so.<sup>6</sup> Medical students receive on average 16 h of training in pain management, and family medicine residents receive less than 4 h of training over the course of their two-year residency training in Canada.<sup>7,8</sup>

Opioid analgesics are medications primarily prescribed for acute pain and palliative care. The use of prescription opioids for chronic pain has dramatically increased over the past two decades, with rates of opioid use disorder and overdoses increasing as well.<sup>9–11</sup> Canada is the third largest per capita consumer of prescription opioids in the world, behind the United States and Germany.<sup>12</sup> Ontario, the province where this study took place, has the highest rates of prescription opioid use in all of Canada.<sup>13</sup> In 2015, nearly one in seven people filled a prescription for opioids in Ontario.<sup>14</sup>

The Extension for Community Healthcare Outcomes (ECHO) model™ was developed in Albuquerque, New Mexico, as a telementoring intervention for HCPs (not patients) managing complex, chronic, and common conditions in remote or underserved communities. Since the launch of the first ECHO program in 2003 for hepatitis C, there have been 594 replications of ECHO in 34 countries with 68 areas of focus.<sup>15</sup> There are 93 ECHO programs that focus on chronic non-cancer pain and/or addiction worldwide.

The goal of ECHO Ontario Chronic Pain and Opioid Stewardship was to support and improve HCPs' skills and confidence in managing patients with chronic pain

patients prescribed opioids in a safe and effective manner. Specifically, this meant teaching fundamentals of chronic pain management, appropriate pharmacologic management regarding prescribing and dispensing practices, and appropriate nonpharmacologic management strategies and disseminating evidence-based best practices. In each ECHO session, an interprofessional team of chronic pain experts is connected via videoconference with community partners who attend from various locations across Ontario.<sup>16</sup> A structured 21-week repeating curriculum including four main modules was utilized: chronic pain fundamentals, opioid management, chronic pain conditions, and special topics in pain management. Each session included a 20-min didactic presentation by a specialist and a patient case presentation by a community partner.

Despite the proliferation of ECHO programs focused on pain or addiction, few studies have examined the effectiveness of the programs. This study aimed to investigate HCPs' perceptions of participation in ECHO; it forms part of a broader evaluation of the impact of ECHO Chronic Pain and Opioid Stewardship in Ontario (ECHO PAIN).<sup>17,18</sup>

## Methods

A qualitative descriptive study was conducted involving in-depth semistructured phone interviews and qualitative content analysis. This study design was selected because it allowed us to produce a comprehensive summary of events in plain language and stay close with the data.<sup>19–21</sup> Study participants were recruited from HCPs who were current attendees or graduates of ECHO PAIN sessions. Purposive sampling was employed as the strategy to recruit HCPs in order to ensure a diverse range of

views and perspectives.<sup>19</sup> Sampling criteria included HCPs who were from a variety of professions, years in practice, community practice types, from practice locations in various Local Health Integration Networks across Ontario, who varied in their length of attendance in ECHO PAIN sessions, and excluded those HCPs who had participated in previous qualitative research involving ECHO PAIN (focus group discussions). Sampling continued until the research question could be answered and no new information could be obtained in semistructured interviews.<sup>22–24</sup>

All in-depth semistructured phone interviews were conducted with HCPs by one member of the research team (NS) between September 2016 and January 2017. The semistructured interview guide was developed by the research team, containing open-ended questions to examine HCPs' experiences, impact on practice, and features of ECHO PAIN (see Appendix). It was piloted with one HCP whose data were also included in this study. No changes were made to the semistructured interview guide after the pilot interview. Formal written consent was obtained prior to all interviews. The interviews were audio-recorded and professionally transcribed verbatim. Memo notes were made during and after the interviews. All HCPs received a US\$50 honorarium for their time and participation.

Qualitative content analysis was conducted inductively to identify emergent themes from the interview transcripts and develop a framework for coding.<sup>25</sup> Two researchers (JZ and NS) read and coded each interview transcript independently. Codes identified the topics in the data that were pertinent to the research questions; data were then grouped into broader themes that were pertinent to the research questions. The research team discussed and refined discrepancies in the themes until consensus was reached.

This study was approved by the University of Toronto and University Health Network Research Ethics Boards (#14-7415).

## Results

Two hundred eleven HCPs participated in ECHO PAIN sessions between June 2014 and August 2016. Out of 211, 22 HCPs were selected to be contacted for research based on the criteria outlined for purposive sampling. Seven did not respond and, of those who responded, 2 declined to participate due to workload constraints. Thirteen HCPs consented to participate and were interviewed. Interviews ranged from 20 to 35 min. Participant demographics are shown in Table 1.

Four main themes emerged during analyzes: (1) HCPs' motivation for joining ECHO PAIN, (2) interprofessional collaboration through ECHO PAIN, (3) the use of opioids for pain management, and (4) barriers and facilitators to participation and satisfaction in ECHO PAIN.

HCPs discussed what motivated them to attend ECHO PAIN, including struggles with challenging patients in their own practices. Because the hub and spokes represent a wide range of health care professions, HCPs shared how participation led to increased awareness of interprofessional roles in chronic pain management. Though not asked in the interview guide, HCPs also discussed the use of opioids for pain management. Some HCPs who could prescribe opioids shared changes in their clinical practice, and nonprescribing HCPs described their increased awareness of opioid harms and regulatory change. Finally, HCPs shared some barriers and facilitators to their participation and satisfaction in the ECHO PAIN program.

### Theme 1: HCPs' Motivation for Participating in ECHO PAIN

HCPs saw ECHO PAIN as an opportunity to fill gaps in their need to obtain new knowledge and for support. Participants recognized their own knowledge gaps in pain management and lack of effective care for their patients with chronic pain, inspiring their desire to enroll in ECHO PAIN. One physician said, "I have a fair amount of patients with chronic pain and I felt that I was trying to help them but that my help was not effective." (Respondent 1) Another physician shared, "Dealing with patients with chronic pain I realized was a challenging area for me and I felt it was a difficult area to cope with. Once I became aware of the [ECHO] project, I thought, this seems like a great way to deal with this." (Respondent 13)

One nurse expressed their frustration with the current care provided by their clinic to their patients on long-term opioids: "What motivated me was the way our patients who are on long-term opioids were managed in our practice, so a little bit of frustration among me

**Table 1.** Participant demographics ( $n = 13$ ).

	$n$ (%)
Profession	
Medicine (family)	4 (30.8)
Nursing (registered nurses, nurse practitioners)	3 (23.1)
Pharmacy	2 (15.4)
Rehabilitation therapists (physiotherapists, occupational therapists, etc.)	2 (15.4)
Psychology	1 (7.7)
Other	1 (7.7)
Sex	
Female	10 (76.9)
Male	3 (23.1)
Practice type	
Family health team	9 (69.2)
Community health center	2 (15.4)
Fee-for-service	1 (7.7)
Hospital	1 (7.7)

and all the providers in our group, you know, presenting to the emerg and presenting to different providers and prescription renewal class and early release and all this sort of stuff that happens every day in our base practice.” (Respondent 2)

A pharmacist heard about ECHO PAIN through word of mouth after seeking advice for a particularly challenging patient: *I actually had an extremely complicated patient, and I ended up just making some phone calls to pharmacists who I thought might be able to help me out with some of the clinical questions. It was a chain of people, but I ended up talking to [an ECHO Ontario Pain hub member who was a pharmacist], and she brought up this ECHO thing that I had never heard of.* (Respondent 12)

One rehabilitation therapist described a “gradual shift” to pain management in their practice as the main reason they decided to join ECHO PAIN. They said, *“I guess for me it’s been an area that’s of growing interest. [...] Increasingly, my practice is shifting more and more in the area of pain management. You know, we all deal with patients in pain, that’s why most of them come to see us.”* (Respondent 6)

Three HCPs cited a desire to develop a more specialized practice in chronic pain management. One physician called it an “underserved area” and expressed a desire to do more specialized work in the area (Respondent 13). Their motivation to participate in ECHO PAIN was the real-world, practice-based situations the sessions offered: *There’s one thing to read the guidelines. [...] It’s another thing to hear in practice what people are doing in certain difficult situations, that maybe fall outside what the guidelines address.* (Respondent 13)

## **Theme 2: Interprofessional Collaboration through ECHO PAIN**

Weekly ECHO PAIN sessions brought together an interprofessional group of both hub and community participants. Through team-based consultations and rounds of iterative questions from multiple professions, HCPs observed and better understood the roles of each profession in chronic pain management. One rehabilitation therapist commented on how the sessions aided a better understanding of the roles of other professions. *“It gave me a better understanding of other practitioners’ roles, or what other practitioners’ roles could be in pain management. So*

*I think that was helpful. It kind of made the team a little bit more efficient in that way, I would say, because I had a better idea of what other members of the team were doing or could do.”* (Respondent 7) A physician said, *“It gives you a real perspective. [...] That kind of stuff, the OTs [occupational therapists], the nurses, the nurse practitioners—it’s just very interesting to see how different people work.”* (Respondent 1)

This recognition of interprofessional roles in pain management led to different types of collaboration that did not exist before participation in ECHO PAIN. A few HCPs commented that they were now seen as pain experts on their local teams, with their colleagues consulting them for advice. And those who did not work in team environments recognized the importance of a multidisciplinary approach to pain management. One nurse described how physicians on their clinical team would ask them for advice on their patients: *“What do you think would be a good medication next?” And I’m not an expert, I don’t prescribe, but because of all the education on ECHO I’m able now to give them my advice.* (Respondent 10) Another nurse also described how their colleagues asked for their opinion, sharing that *it’s built up our whole team in that way. They’re like, oh yeah, go ahead.* (Respondent 2)

Beyond consultations, HCPs shared stories about how they learned to work in collaboration with other professions and how their collaboration improved patient outcomes. One physician credited their success tapering a patient who had been on high doses of opioids to collaboration with their pharmacist and social worker. They said, *If I had had to do that by myself, I don’t think I would have been successful.* (Respondent 1)

Another physician leveraged their family health team pharmacist to distribute naloxone kits for their patients on high-dose opioids. Finally, one nurse described communicating with local pharmacies after they started attending ECHO PAIN, *making them aware of which patients are on a narcotic contract.* (Respondent 2)<sup>a</sup>

## **Theme 3: The Use of Opioids for Pain Management**

Multiple professions discussed opioids for pain management, though this topic was unsolicited in the interview guide. Physicians described increased discernment

<sup>a</sup>A narcotic contract or “opioid treatment agreement” is a tool used by HCPs aimed at reducing misuse of prescription opioids in which an agreement is laid out between the HCP prescriber and their patient regarding boundaries for the safe and continued prescription of opioids, such as specification of the pharmacy location where the patient will fill the prescription, agreement to undergo urine drug screens as requested, consequences for aberrant behavior, and consequences for diversion.



around their opioid prescribing practices. One physician expressed “guilt” around their former practice, saying, “*I feel much more confident in managing chronic pain patients, in that I will never go up as high in prescribing opioids as I did before.*” (Respondent 1) Another physician described increased skills with opioid management: “*Am I managing the right diagnosis here? I am much more careful in prescribing any opioids. [...] I feel I have a much better way of pulling apart different parts of the pain and not being drawn into the road of, here is a pill.*” (Respondent 9)

Not all physicians had positive experiences discussing their patients on opioids during ECHO PAIN sessions. One felt misunderstood for their management of a “controversial case,” a patient with fibromyalgia. They said, “*I felt uncomfortable all along about it. [...] The reason I was presenting the case was, ‘What do you do when you see someone that clearly seems to be improving, but you’re just concerned about the safety of it? Would you actually stop these medications or not?’*” (Respondent 13) Despite uncertainty around prescribing opioids for this patient, this physician desired more nuanced discussion around management for this patient. But after the session, this physician felt judged by the group.

Nonprescribers also shared their attitudes regarding opioids. Often, they emphasized the division of responsibility between them and prescribers. A rehabilitation therapist stated that even as a nonprescriber, it was important to learn about this topic: “*Obviously, as a nonprescribing health practitioner I wasn’t looking at it particularly with regards to the opioids stewardship component, but I think it’s important that you have some background in pain medications, and how they’re prescribed.*” (Respondent 6) These nonprescribing HCPs talked about the knowledge of regulatory change. One nurse practitioner said in anticipation of being able to prescribe opioids, “*My goal was to learn [...] everything about chronic pain as a nurse practitioner, because in Ontario nurse practitioners will be allowed to prescribe opioids. That was scary for me, because [...] this was never really part of my practice.*” (Respondent 2)

#### **Theme 4: Barriers and Facilitators to Participation and Satisfaction in ECHO PAIN**

HCPs discussed barriers and facilitators to their participation and satisfaction in ECHO PAIN as recommendations for the program. Time commitment was a point of contention brought up by many HCPs. Though attending ECHO PAIN was for educational purposes, some HCPs found that taking 2 h out of their clinic day was

not feasible and took time away from seeing patients. One pharmacist shared, “*Two hours on a Thursday is really hard for us to commit to because we’re only closed for an hour between 12:30 and 1:30 for lunch, and then we start seeing patients again. For the most part, I listen for the didactic part which I think is great, but ... [it is hard] for me to have another hour to sit there and listen to the cases; it’s taking away from my own patient care.*” (Respondent 11)

HCPs shared how technology mediated participation in sessions. “*I thought [Zoom was] a tremendous way of connecting. It’s so easy. It worked so well. You can do it in your own exam room. [...] I’m very impressed.*” (Respondent 1) During the time these interviews were conducted, ECHO PAIN had transitioned from one technology platform, the Ontario Telemedicine Network, to another, Zoom. HCPs expressed how they appreciated the ease of use with the latter.

Others HCPs brought up issues regarding their organizational support as a barrier or facilitator to their participation in ECHO PAIN. Some described organizational support in the form of managerial approval to carve out the time in their schedules and attend weekly sessions. Another type of organizational support was in the selection and delegation of who attends ECHO PAIN sessions. Often one HCP from an interprofessional team is delegated the task of attending these education sessions. But with little buy-in from the rest of the team, some nonphysician HCPs felt frustrated after attending because they were unable to implement changes to improve patient care alone. Referring to the physicians on their team, one rehabilitation therapist said, “*I think it would have been more helpful if it had been possible for other people to participate as well.*” (Respondent 7)

Finally, several HCPs discussed how the structure of the ECHO PAIN sessions could be improved to increase satisfaction. One central tenet of the ECHO model is case-based learning. During most ECHO PAIN sessions, there was one patient case presentation, but sometimes there were two. One psychological therapist said, “*With two cases, I felt like it was so rushed that it was hard for me to catch on; it was hard for me, even to give advice to the other team who was presenting the case.*” (Respondent 3) Others pitched suggestions around the creation of an ongoing group for HCPs who had “graduated” from the program. The purpose of the group would be to help maintain the learning and community gained in the program.

## **Discussion**

ECHO Ontario Chronic Pain and Opioid Stewardship is a telementoring education program for HCPs aimed

at supporting and improving chronic pain and opioid management in the province of Ontario, Canada. This qualitative study aimed to explore the perceptions of HCPs who attended this educational program. HCPs shared their motivation in joining, their newfound interprofessional approaches to chronic pain management, the challenges regarding opioid stewardship in their practices, and barriers to their participation and satisfaction in the program.

This study was part of a larger, ongoing evaluation of ECHO PAIN. Other studies have demonstrated that the ECHO program increases HCPs' self-efficacy and knowledge.<sup>26–30</sup> Previous research from our team has highlighted the impact of ECHO PAIN on HCPs' confidence, knowledge, and clinical practices, as well as the importance of the development of a community of practice.<sup>31–33</sup> Our results in this study suggest that HCPs recognize a knowledge gap in pain management. They were drawn to attend ECHO PAIN for a variety of reasons: to develop a specialized skillset, to share and discuss the management of patient cases, and to connect to other HCPs, both peers and specialists.

Patients with chronic pain are consistently cited as some of the most medically complex and challenging patients in a HCPs' practice.<sup>34–36</sup> This is also reflected in higher health care utilization by this population.<sup>37</sup> Some HCPs label patients with chronic pain “difficult,” referring to a certain level of emotional weight in their interactions.<sup>38</sup> Yet, pain is one of the most common reasons why patients seek medical care.<sup>39</sup> These tension-filled patient–provider relationships in pain management can lead to increased feelings of HCP stress, depression, fear, guilt, anxiety, and despair.<sup>31,40–42</sup>

Based on the educational theories of deliberate practice, social cognitive theory, situated learning, and communities of practice, our study supports the growing body of evidence that demonstrates how ECHO PAIN may be an effective educational intervention to decrease the emotional toll of caring for patients with chronic pain.<sup>43–46</sup> Through weekly supportive, guided conversations, HCPs learn that they are not alone and how to leverage resources of other HCPs in their own practice and in the community.

In our study, we found that participating HCPs learned about the roles that a variety of professions play in management of patients with chronic pain. This increase in understanding of scope and responsibility of roles allowed some HCPs to establish new therapeutic alliances: some became the token pain champion on their teams, and others sought new ways to provide interprofessional care as a direct result of knowledge from ECHO. This is significant because team-based care can be one mechanism to decrease

professional isolation, emotional exhaustion, and burnout.

Opioids remain a contentious but important issue in primary care. Though questions related to opioids were not asked explicitly in the interview guide, the use of opioid medication for pain management came up repeatedly. Fears surrounding opioid prescribing and the responsibility of medical management were raised by both prescribers and nonprescribers. At the time of the interviews, physicians were the only professionals who could prescribe opioids to patients. In April 2017, nurse practitioners in Ontario obtained authority to prescribe controlled substances, including opioids.<sup>47</sup>

The prevalence of opioid medications prescribed for pain management and the increased general awareness of the public about the opioid “crisis” likely contributed to the salience of opioids in qualitative content analysis. Further, the program goals of ECHO PAIN and didactic presentation content promote the safe and effective management of pain, where pharmacological management and, in particular, opioid management plays a large part.<sup>18</sup> Given the perceived risks of opioid prescribing at the individual patient level, the HCP level, and to the societal level, nonprescribers emphasized the separateness of their scopes of practice.<sup>48</sup>

Finally, recommendations for the ECHO PAIN program were collected for continued quality improvement. Some recommendations have been implemented: since June 2019, ECHO PAIN sessions have reduced from 120 to 90 min weekly. This is in line with our goal to deliver more concise and relevant content for primary care HCPs. Though the point around organizational support is an important finding, exploring a fuller understanding of the culture of institutions and why this occurs is outside the scope of this article.

### **Limitations**

HCPs who attend ECHO PAIN may be a self-selected group whose experiences are not generalizable to other providers in Ontario or the rest of Canada. Though allied health professionals were interviewed, other HCPs who attended ECHO PAIN missing from our participant group include physician assistants, dietitians, psychologists, and mental health workers. Another limitation was that this study involved a single time point for data collection. We therefore could not assess changes over time attributed to ECHO PAIN. Future research could be aimed at examining and understanding factors that impact clinical uptake of

ECHO PAIN recommendations, such as organizational support in the form of team or solo attendance, length of time in practice, and practice type and location. Using established frameworks in implementation science, future research could also benefit from using the Consolidated Framework for Implementation Research to examine and synthesize the complex systems of knowledge translation that occur in ECHO PAIN.<sup>49</sup>

## Conclusion

There are many challenges to improving the delivery of chronic pain management in Ontario. ECHO PAIN is one program that aims to support and improve pain management and opioid stewardship in the province. HCPs described benefits from their participation in ECHO PAIN through increasing their knowledge about management of patients with chronic pain and increased interprofessional lens. Use of opioid medication to manage chronic pain remains a difficult area for both prescribers and nonprescribers to manage. Finally, time commitments for session attendance, organizational support, and session structure were discussed as barriers to participation in and satisfaction with ECHO PAIN. The technology platform was a facilitator to participation in sessions. This study was the first in Canada to explore the motivations of HCPs in attending a chronic pain telementoring program and the first to examine the interprofessional effects of participation. Future research may be guided by frameworks from implementation science to examine and synthesize knowledge translation that occurs in ECHO PAIN. Findings in this study may be used to guide future implementation of telementoring programs, not limited to chronic pain.

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## ORCID

Jane Zhao  <http://orcid.org/0000-0002-4143-9031>  
 Emily Seto  <http://orcid.org/0000-0002-8723-5915>  
 Fiona Webster  <http://orcid.org/0000-0002-7318-7713>  
 Andrea D. Furlan  <http://orcid.org/0000-0001-6138-8510>

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## Appendix. Semistructured interview guide

Good morning/afternoon [insert participant name].

[Introductory section] For the purposes of research, I would like to record our conversation. Is that okay with you?

[TURN ON RECORDER—placed so that you can see the little red light. Also, see notes from the transcribing service on how best to record a telephone interview. With the recorder on, state your name, respondent's name, and today's date. Confirm that respondent has agreed to participate in the interview and to be recorded. Wait for audible affirmation.]

Do you have any questions before we get started? [*Respond to questions*].

### Topic 1: Your experience with ECHO

- (1) Initially what motivated you to participate in project ECHO?
- (2) Reflecting on your experience with ECHO, how has it met or not met your expectations?

**Prompts:** Can you give me an example? What did you like most about ECHO? What did you like least about ECHO? Was there anything that surprised you about participating in ECHO and, if so, what?

- (3) \*(If presented case) I want to ask about your experience(s) presenting a case at an ECHO session

I see you have presented a case for ECHO. **Prompts:** Patient detail and date

- a. How did you decide what case to present? What was your experience of presenting a case?

**Prompts:** What were benefits and drawbacks of presenting? How did you feel about feedback from other spokes and the hub?

- b. In what ways, if any, did presenting a case affect your management of the presented patient?

- c. \*(If did not presented case) I see you haven't presented a case at ECHO. I'm curious as to why that might that be.

**Prompts:** Time constraints, perceived value for effort, type of practice, number of ECHO sessions.

### Topic 2: Impact of ECHO on your practice

- (4) How has ECHO affected your interaction with patients?
- (5) How has participating in ECHO affected your interactions with clinicians in your practice?
- (6) With health care providers outside your own team/office/clinic [as appropriate]?
  - a. What changes, if any, have you implemented in your practice because of ECHO?

**Prompts:** Communication, lab testing, use of electronic or other resources?

- b. What would you say about the impact of ECHO on your confidence in managing pain patients?

- c. **Prompt if needed:** Some participants have found that participation in ECHO has actually made them feel less confident, because it exposed them to what they didn't know. Can you comment on that at all?

### Topic 3: Features of ECHO

ECHO relies on using technology to connect clinicians across Ontario. We are interested in your interactions with technology and the different functionalities and features provided by ECHO.

- a. How is your experience of using the Ontario Telemedicine Network or other connection method?

**Prompt:** User experience of online community building.

- b. We are interested in your experience using the online discussion board. Did you use this? How have you found this tool to be helpful? How do you think this could be improved?
- c. Did you find that the information/resources within ECHO supported your learning needs?

**Prompts:** Real-time support

- d. Are there additional features you would like to see in ECHO?

**Final Question:**

Is there anything else that you thought I would ask that I didn't ask or that you would like to add?  
Thanks for your time and your valuable input.