RESEARCH

Enhanced train-the-trainer program for registered nurses and social workers to apply the founding principles of primary care in their practice: a pre-post study

Marie-Eve Poitras[1*], Yves Couturier[2], Emmauelle Doucet[1], Vanessa T. Vaillancourt[1], Gilles Gauthier[1], Marie-Dominique Poirier[1], Sylvie Massé[3], Catherine Hudon[1], Nathalie Delli-Colli[2], Dominique Gagnon[4], Emmanuelle Careau[5], Arnaud Duhoux[6], Isabelle Gaboury[1], Djamal Berbiche[7], Ali Ben Charif[8], Rachelle Ashcroft[9], Julia Lukewich[10], Aline Ramond-Roquin[11], Priscilla Beaupré[1] and Anaëlle Morin[1]

Abstract

Background A train-the-trainer approach can effectively support the integration of new practice standards for health and social services professionals. This study describes the effects of an enhanced train-the-trainer program to support registered nurses and social workers working in primary care clinics in their understanding of the fundamental principles of primary care.

Methods We implemented an enhanced train-the-trainer program for registered nurses and social workers in six primary care clinics. We conducted a pre-post study using quantitative and qualitative data to assess trainers' and trainees' intention, commitment, and confidence in applying acquired knowledge.

Results We trained 11 trainers and 33 trainees. All the trainers and trainees were satisfied with the program. Trainers were less confident in their abilities as trainers following the training, especially regarding tailored coaching ($p = 0.03$). Trainees' commitment to becoming familiar with the functioning of their clinic ($p = 0.05$) and becoming part of the team increased significantly ($p = 0.01$); however, their intention to use their knowledge decreased ($p = 0.02$). Trainers and trainees identified organizational and professional barriers that may explain the observed decrease.

Conclusion An enhanced train-the-trainer program positively impacted registered nurses' and social workers' assimilation of the fundamental principles of primary care. Further research is needed to understand the long-term effects of train-the-trainer programs on primary care trainees and how these effects translate into patient care.

Keywords Train-the-trainer, Primary care, Nurse, Social worker, Patient-oriented research, Healthcare, Training

*Correspondence:
Marie-Eve Poitras
marie-eve.poitras@usherbrooke.ca
https://www.poitraslab.com
Full list of author information is available at the end of the article

Background

It is widely recognized that primary healthcare is the foundation of the healthcare system [1] and that its performance should be closely monitored. In Canada, most primary care clinics (PCCs) are based on the Patient Medical Home model and must offer comprehensive, interdisciplinary care [2]. PCCs are medical clinics grouping physicians collaborating with other healthcare professionals to improve access and quality of care [1]. Despite this interdisciplinary structure and the apparent direction of comprehensive care promoted by this new structure, the Canada Foundation for Innovation reported that, in Canada, access to care, integration and coordination of services, interprofessional collaboration and patient engagement [1] are not meeting targets. Failure to implement comprehensive and interdisciplinary care in primary care results from various barriers, including a lack of understanding of professionals' roles, which limits the scope of practice, suboptimal work in interdisciplinary teams, and low application of best practices related to patient engagement. Furthermore, many professionals working in primary care clinics need to be trained in an interdisciplinary and patient-centred approach including close collaboration with family physicians. Registered nurses and social workers are professionals who lack training in a PCC context, which needs to be improved and included in their initial training [3–6].

Several Canadian provinces, professional associations, and primary care networks have tried to support integrating comprehensive and interprofessional care in PCCs. For example, guidelines and recommendations were published and distributed to primary care professionals [7–9]. In 2019, the Quebec Ministry of Health and Social Services collaborated with various experts to develop guidelines [10, 11], one for registered nurses and one for social workers working with family physicians in PCCs. Those guidelines outlined the fundamental principles of comprehensive care in primary care: interdisciplinary collaboration, patient engagement, and the importance of practising a full scope to provide high-quality care. Those guidelines are for nursing and social services professionals new to primary care or wanting to improve their practice in line with primary care principles.

Guidelines are an effective knowledge transfer tool for disseminating information to various professionals. Guidelines ensure a common understanding of the vision and approach that needs to be operationalized in clinical practice. However, various implementation strategies, including training, are required to optimize guidelines' reach and use. These strategies should also consider the specific contexts of PCCs, which are often geographically delocalized entities, including rural and remote ones, with an interprofessional dynamic based on patient needs [12–18]. The spread of clinical sites requires a teaching approach that can serve several professionals simultaneously [18]. Furthermore, including patient partners in training courses, mainly when intended for improving patient care practices, is also essential [19].

Among the educational interventions that enable several professionals to be trained on the same topic, including guidelines content, train-the-trainer (TTT) programs have shown effectiveness [20–23]. Pearce and collaborators (2012) [24] showed that TTT programs that combine different andragogical strategies promote knowledge acquisition and clinicians learning. However, how this approach must be used to support the appropriation of knowledge by registered nurses and social workers working in PCCs is still being determined [25]. It also needs to be clarified how sustained and high-intensity coaching during training affects knowledge acquisition. Additionally, patient engagement is a fundamental aspect of comprehensive care [26], but it needs to be adequately covered in the continuing education of primary care professionals [27, 28].

Current literature fails to document the development, implementation, and effects of enhanced training for PCC professionals, which integrates patients as trainers training alongside clinical trainers and is not limited to a testimonial role. Therefore, evaluating a TTT program that incorporates patient engagement is crucial [12, 16, 20, 21, 29]. This article evaluates the effect of an enhanced TTT program promoting primary care's founding principles on the knowledge, intention, commitment, and confidence of registered nurses and social workers working in PCCs.

Methods

We implemented an enhanced TTT program for registered nurses and social workers in six PCCs located in three various regions. Two PCCs were in an urban area, two in a suburban area, and two in a remote area. We conducted a pre-post study [30] to assess trainers' and trainees' intention, commitment and confidence in applying acquired knowledge. We used a qualitative approach to describe how the enhanced train-the-trainer program impacted trainees' disciplinary, interprofessional, and patient engagement. The study's design and protocol were co-created with stakeholders based on an integrated knowledge approach and are published elsewhere [31].

Sample

Trainers and trainees

Through each area's governance representatives, we recruited at least one social worker and one registered nurse with a clinical coaching position. Three social workers and four registered nurses were recruited, hereafter referred to as clinical trainers. To avoid a power imbalance between clinical and patient trainers,

we recruited two patient trainers for each area ($n=6$) through healthcare organizations' patient partnership offices or patient associations. Through each PCC's governance representatives, we recruited 25 registered nurses and eight social workers to be trained by the clinical trainers, hereafter referred to as trainees.

Enhanced train-the-trainer intervention

To optimize the success of our intervention, we used the Knowledge-to-Action framework [32], which recommends involving relevant stakeholders in the creation process, adapting to the local context, and implementing a tailored intervention. A training development committee consisting of four principal investigators (two researchers (YC, MEP) and two patient partners (GG, MDP)) and three content experts (VTV, ED, LP) co-created the enhanced TTT program through an iterative process with stakeholders (patient partners, clinicians, decision-makers). The committee developed training content to support the development of knowledge of the four founding principles of primary care found in the guidelines: Role of PCCs in primary care trajectories, interdisciplinary collaboration, patient engagement, and the importance of occupying the full scope of practice to provide high-quality care. They also developed additional training content about andragogy and tailored coaching to support clinical and patient trainers in training trainees.

The development committee provided the trainers with two days (14 h) of in-person training that covered the role of PCCs in primary care trajectories, registered nurses' scope of practice, social workers' scope of practice, interprofessional collaboration in PCC, and patient engagement. Each trainer received a toolkit containing educational activities and a copy of both registered nurses' and social workers' guidelines as a reference during training. The development committee used several andragogical strategies during training: lectures, discussions, interactive quizzes using Poll Everywere software, reflexive exercise, association games, clinical cases, unguided/guided group discussions, myth buster game, testimonials, hands-on session videos of clinical vignettes, and role playing. Table 1 overviews the interdisciplinary and patient-oriented enhanced TTT program and post-training coaching [22].

The development committee organized monthly and on-demand professional co-development sessions to support trainers in developing and mastering their roles. For example, clinical trainers received additional customized training related to partnering with patients to better understand patients' roles and the value of their experiential knowledge. The patient partners who co-lead this study provided one-on-one support to some patient trainers who had faced challenges fulfilling their roles. The development committee also met with trainers from each area one-on-one to support them with their preparation to train trainees. Finally, trainers continuously communicated with each other and research team members via an online community, email, or telephone.

After being trained by the development committee, the trainers from each area trained the recruited trainees for 4 to 6 h, according to the needs and characteristics of each PCC. To do so, the trainers from each area mapped out characteristics, services, and staff for each participating PCC. They also identified specific training needs through discussions with managers and clinicians. The

Table 1 Enhanced TTT intervention program overview

Module	Overview[a]
Introduction Module	Welcome and introduction of participants and trainers. Presentation of the context that led to the deployment of the clinical practice guidelines in Quebec. Objectives of the guides and contextualization of the training of trainers in a perspective of interprofessional collaboration and patient engagement.
Module 1: Andragogy and clinical coaching in the context of PCCs	Development of skills and confidence to train and coach clinicians. Presentation of different andragogical strategies.
Module 2.1: Primary care and role of PCCs in care service trajectories	Acquisition of knowledge about front-line services and PCCs to better support clinicians in the change in practice proposed by the guidelines.
Module 2.2: Scope of practice of the family practice nurse and social worker in PCCs	Improved knowledge of the field of practice of clinical nurses and social workers to better support clinicians in the development of expected professional practices.
Module 2.3: Interprofessional collaboration in PCCs	Acquisition of strategies to accompany professionals in the development of collaborative practices. Explanation of benefits and added value.
Module 2.4: The patient engagement	Presentation of the approach in partnership with patients and relatives and valorizing patients' experiential knowledge.
Module 3: Hands-on application	Presentation of the multi-level approach, easy manipulation of the proposed teaching material, and practical application of teaching strategies.
Conclusion Module	A reminder of the essential elements, roundtable discussion to gather impressions and comments on the training.
Ad hoc co-development meetings and coaching	Individual or team meetings aiming to consolidate learnings or to address emerging themes of need that have yet to be explored in the training.

[a]For more details on the training program's content, please contact the corresponding author

trainers could tailor training duration, emphasize certain parts, and select appropriate andragogic strategies. However, they were not allowed to modify training content. Following training, the teams of trainers conducted tailored clinical coaching activities over a 6-month period to support the trainees in assimilating the clinical practice guidelines and implementing expected practices.

Training evaluation

We used the New World Kirkpatrick Model (Fig. 1) to evaluate the training program [33]. This model, composed of four levels of training measures (Reaction, Learning, Behavior and Results), is widely used to assess training programs and to maximize the transfer of learnings into behaviours and subsequent organizational or patient-oriented results [23, 34, 35]. For this study, we evaluated items related to level 1-Reaction, which refers to the degree to which participants find the training favorable, engaging, and relevant to their job, and level 2-Learning, which refers to the degree to which participants acquire the intended skills, confidence and commitment [33]. We also measured intention because it is a strong predictor of behaviour [36, 37]. Intention corresponds to the degree to which a person has formulated conscious plans to perform or not perform a specific future behaviour [38]. Four methods of data collection were used to inform the evaluation.

First, we collected quantitative pre and post-training data with Survey Monkey (California, United States of America) self-administered questionnaires composed of modified items from Kirkpatrick [39, 40] (available in Additional file 1). Trainers answered multiple choice questions describing their satisfaction regarding the enhanced training with 16 items formatted as a 5-point Likert scale (Level 1-Reaction). They also expressed their confidence level (Level 2-Learning) for 25 items related to implementing the enhanced TTT program or the research project, training and coaching of trainees, and communication with stakeholders by completing a 5-point Likert scale. Trainees assessed their satisfaction with the training with a 16-item 5-point Likert scale (Level 1-Reaction), their confidence and commitment level (Level 2-Learning) for ten items related to their scope of practice, interprofessional collaboration, and patient engagement. Trainers' and trainees' intention to apply knowledge was assessed with a 10-point scale item [33, 41, 42].

Second, we collected qualitative data. Each trainer and trainee answered post-training open-ended questions to identify training strengths, opportunities for improvement, and elements that could impede the application of training knowledge. They also completed a sociodemographic questionnaire.

Third, we conducted post-training focus groups with trainees to gain an in-depth understanding of Level 2-Learning and how the enhanced TTT program has affected their intention, confidence, and commitment to integrate the content of the clinical practice guidelines in their practice, especially interprofessional collaboration and patient engagement.

Lastly, we documented the development of the enhanced TTT program and its effects by collecting qualitative data through logbooks. Trainers and development committee members noted their observations and thoughts during the project (e.g., the impact of the training and elements that enable or restrain assimilation of the trainer's role).
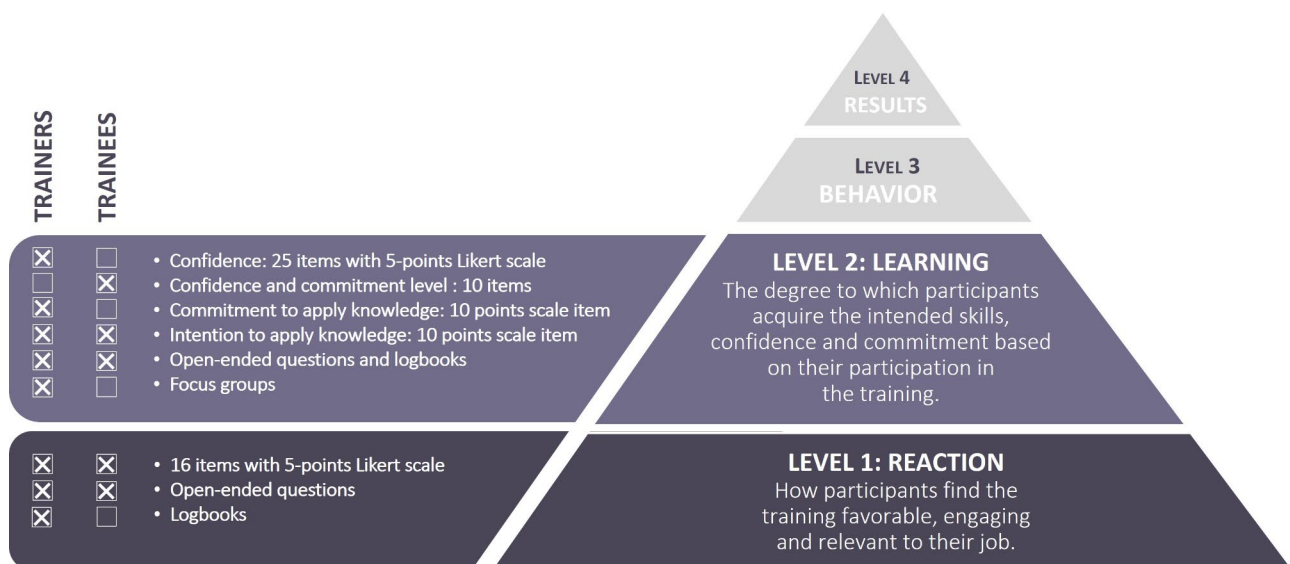

Fig. 1 Four levels of Kirkpatrick's training evaluation model and data collection tools according to participant type

Data analysis

First, we used descriptive statistics to present sociodemographic data. To describe the effects of the educational intervention, continuous dependent variables were analyzed using linear Mixed Models with SAS's PROC MIXED, a generalization of a paired data model or more like a repeated measures ANOVA. Quantitative data analyses were conducted with SAS version 9.4. Items were considered as significant if ≤ 0.05.

Second, we used the NVivo software to manage qualitative data (logbooks, verbatim transcriptions from interviews). Three concurrent streams of qualitative analysis were used: condensation (e.g., transformation of raw data), presentation (e.g., narrative text) and verification of conclusions (e.g., going back to field notes) [43]. Both principal investigators, patient co-leads and two research agents carried out data analysis by exploring themes related to (1) Level 2 skills, confidence and commitment to use clinical practice guidelines, interprofessional collaboration and patient engagement and elements that enable or restrain it and (2) the perceived impacts of the education intervention on trainers and trainees. Finally, a sixth team member validated the emerging themes and final propositions.

Table 2 Characteristics of participating trainers and trainees

Participant characteristics	Number of participants n (%)		
	Clinical trainers n = 7	Patient trainers n = 6	Trainees n = 33
Gender			
Male	1 (14)	3 (50)	0 (0)
Female	6 (86)	3 (50)	33 (100)
Age			
20–39	3 (43)	0 (0)	
40–59	4 (57)	3 (50)	
60–79	0 (0)	3 (50)	
Highest academic level			
College	0 (0)	1 (17)	1 (3)
Undergraduate	7 (100)	3 (50)	30 (91)
Graduate	0 (0)	2 (33)	2 (6)
Background			
Nursing	4 (57)	NA	
Social work	3 (43)	NA	
Language			
French	7 (100)	6 (100)	31 (94)
English	0 (0)	0 (0)	1 (3)
Other	0 (0)	0 (0)	1 (3)
Country of birth			
Canada	7 (100)	7 (100)	31 (94)
Other	0 (0)	0 (0)	2 (6)

Mixed data integration

The principal investigators (researchers and patient partners) presented the qualitative and quantitative data to the co-investigators of this study. We used qualitative data to interpret quantitative data. We also identified discrepancies or convergences between the data sources to understand the impacts of the enhanced TTT program on trainers and trainees.

Results

Of the 13 trainers recruited, 11 were trained in October 2019 by the development committee. Two trainers did not receive the enhanced training and were removed from the study; one was given only three hours of training, while the other could not attend due to a health condition. Four men and nine women aged 51 ± 13 years were trained, including four registered nurses, three social workers, and six patient trainers. Trainers trained a total of 33 trainees between November 2019 and January 2020. Twenty-five registered nurses and eight social workers were trained. Table 2 shows the sociodemographic characteristics of the 11 trainers.

Level 1 – reaction

Trainers

Table 3 presents the 16 items used to assess Level 1-Reaction (did the participant enjoy the training). Trainers were highly satisfied with the training (4.27/5 ± 0.79 (mean score)). They positively noted every item related to development committee skills (range of 4.27 to 4.64/5); the highest-rated item was their level of knowledge (4.64/5 ± 0.50). The qualitative data validated this as trainers identified dynamic delivery and ability to communicate as a strength of the training program as expressed by some:

> *The trainers are dynamic and friendly. While mastering their subject very well, they remain humble and listen to group participants (Patient trainer 2).*
> *[referring to what he liked] Diversity in the delivery formats and ways of dealing with the [training] content. The dynamism of the trainers. Exchanges between the participants. Equipment planning (including accommodation and others) (Social worker 2).*

The lowest rated item was « I feel able to apply what I have learned » (3.91/5 ± 0.51), and trainers did identify some potential improvements. For example, many felt that the training was too short:

> *[We would have needed] more time for group discussions… (Patient trainer 1).*

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Table 3 Trainers' and trainees' reactions to training content assessed immediately after the training

Level of satisfaction	Mean ± SD	
	Trainers	**Trainees**
Difficulty level[a]	3.00 ± 0.89	4.17 ± 0.83
Duration of training[b]	3.91 ± 1.70	6.45 ± 1.53
How would you rate the trainers in terms of the following		
Their ability to keep the training interesting and dynamic[c]	4.45 ± 0.52	3.66 ± 0.72
Their ability to communicate[c]	4.45 ± 0.52	3.90 ± 0.77
The use of pedagogical material[c]	4.27 ± 0.79	3.59 ± 0.78
Their level of preparation[c]	4.55 ± 0.52	3.62 ± 0.73
Their ability to maintain an adequate level of interactivity[c]	4.55 ± 0.52	3.90 ± 0.77
Their level of knowledge[c]	4.64 ± 0.50	3.72 ± 0.70
How much do you agree with the following		
This training will help me to be a better trainer[d]	4.45 ± 0.52	NA
This training was a success[d]	4.55 ± 0.52	3.55 ± 0.91
I clearly understood the objectives presented at the beginning of the training course[d]	4.73 ± 0.65	4.24 ± 0.87
The materials provided during the training were appropriate and useful[d]	4.82 ± 0.40	4.14 ± 0.88
Audiovisual tools were adequate and useful[d]	4.64 ± 0.50	3.93 ± 0.75
Several andragogical approaches were used to satisfy all learning styles[d]	4.64 ± 0.67	4.24 ± 0.69
I feel able to apply what I have learned[d]	3.91 ± 0.51	3.93 ± 1.03
The training met my expectations[d]	4.27 ± 0.79	3.14 ± 0.95

[a]Evaluated on a 5-point Likert scale from very difficult (1) to very easy (5)

[b]Evaluated on a 0 to 10 scale from short (1) to long (10) and where (5) is adequate

[c]Evaluated on a 5-point Likert scale from very low (1) to excellent (5)

[d]Evaluated on a 5-point Likert scale from strongly disagree (1) to strongly agree (5)

The section on interprofessional collaboration is too heavy for the time available; the content could have been more focused and presented dynamically and interactively to provide stronger anchors. (Social worker 1)

Trainees
The trainees were satisfied with both the training (3.14/5±0.95 (mean rating)) and the competencies of the trainers (range of 3.66 to 3.9/5). Trainees appreciated the ability of trainers to keep the training interactive (3.90±0.77) and to communicate (mean rating 3.90±0.77). Trainees also enjoyed the multiple andragogical approaches used.

[One of the strong points was] the diversity of teaching methods making the training more dynamic (Nurse 18).

Several trainees appreciated the richness of the discussions and the sharing with other trainees and trainers. Regarding the module on primary care and the roles of PCCs in the care service trajectories, one trainee also appreciated learning about the realities of other professionals from different backgrounds and regions.

It was interesting to get together and learn about what is being done elsewhere in Quebec (Nurse 5).

The qualitative data indicated that trainees felt the training did not focus enough on the clinical practice guidelines and how to use them to support their practice development. Some participants reported that these guidelines introduced new concepts, and they would have benefited if trainers had referred to the guide more often.

There was much time [during the training] to introduce what a PCC is, much time for the nurses, and there wasn't enough time at the end to discuss the points I had read in the [practice] guidelines. I would have liked more hands-on time on the action plan than on things we're already doing that are not new concepts to us. (Nurse 10)

Finally, some trainees reported that the enhanced TTT program met a need for interprofessional team support to resolve specific issues already known in the PCCs, as explained by one of them:

We have key resources to help us address issues we've been trying to work on for years. The fact that it gives us a common language. (Nurse 14)

Level 2 – learning (intention, confidence, and commitment)
Trainers
We used 26 items to assess Level 2-Learning (did trainers acquire the intended intention, confidence, and commitment) of the New World Kirkpatrick Model.

Overall, analyses revealed that trainers were less confident in their abilities as trainers for almost every item related to implementing the enhanced TTT program or the research project itself, training and coaching of trainees, and communication with stakeholders (Table 4). Indeed, only one significant difference between pre- and post-training was observed, and it was related to their ability to tailor coaching ($p = 0.03$). The qualitative data allowed us to identify elements that explain this result. Organizational challenges concerning the application of the training content persist despite the training and the various appropriation activities, as expressed by some trainers:

> *Lack of openness and reluctance to change operations to adhere to best practices (Trainer-Social worker 1).*
> *[in terms of his ability to train] It all depends on the physicians' requests [their willingness to collaborate on the project] (Trainer-Nurse 4).*

Table 4 Trainers' intention, confidence, and commitment pre-post training

Items assessed	Pre- Mean ± SD	Post- Mean ± SD	p-value
Intent to apply the knowledge learned in the training course[a]	9.64 ± 0.50	9.18 ± 0.60	0.20
Currently, what is your level of confidence in your abilities as a trainer to:			
Make optimal use of the time allotted for learning about the guidelines[b]	2.91 ± 0.83	2.45 ± 0.69	0.30
Maintain a high level of engagement of healthcare professionals in the application of the practices contained in the guidelines[b]	2.82 ± 0.60	2.73 ± 0.65	1.00
Maintain a climate of respect and openness with healthcare professionals	3.55 ± 0.52	3.45 ± 0.52	0.68
Communicate the objectives of the research project[b]	3.27 ± 0.90	3.27 ± 0.79	0.57
Clearly communicate expectations to healthcare professionals at the outset of training[b]	3.18 ± 0.98	3.09 ± 0.70	0.60
Use different andragogic strategies adapted to meet different learning styles[b]	2.73 ± 0.75	2.91 ± 0.94	0.54
Use the training materials provided[b]	3.00 ± 0.77	3.00 ± 0.77	0.22
Convey knowledge related to the use of the guidelines[b]	3.00 ± 0.89	2.64 ± 0.67	0.21
Clarify the misunderstandings and difficulties health professionals have in understanding the practices described in the guidelines[b]	2.91 ± 0.70	2.64 ± 0.50	0.09
Provide constructive feedback to healthcare professionals regarding the application of the practices included in the guidelines[b]	2.64 ± 0.67	2.64 ± 0.67	1.00
Provide advice to healthcare professionals to facilitate the implementation of the practices in the guidelines[b]	2.55 ± 0.52	2.36 ± 0.67	0.19
Actively involve healthcare professionals in the analysis and resolution of problems related to the application of the guidelines[b]	2.55 ± 0.69	2.64 ± 0.50	1.00
Adjust the intensity of support offered according to the needs of each healthcare professional in implementing the content of the guidelines[b]	2.91 ± 0.83	2.56 ± 0.69	0.03
Enhance the skills of healthcare professionals to apply the content of guidelines[b]	2.55 ± 0.69	2.64 ± 0.67	0.52
Motivate healthcare professionals to integrate the new practices in the guidelines and maintain a positive influence[b]	3.00 ± 0.63	2.91 ± 0.70	1.00
Carry out adapted clinical support sessions to accompany healthcare professionals in complex situations[b]	2.64 ± 0.92	2.36 ± 0.50	0.33
Meet with managers, physicians and decision-makers to disseminate information related to the project[b]	2.82 ± 0.75	2.55 ± 0.69	0.08
Support managers, physicians and decision-makers in carrying out the research project[b]	2.91 ± 0.54	2.73 ± 0.79	0.35
Understand the dynamics of PCCs, the professionals practicing in them, and the organizational structure, and adapt training according to needs[b]	2.73 ± 0.79	2.55 ± 0.59	1.00
Currently, what is your level of confidence in training healthcare professionals related to the following themes?			
The functioning of primary care, family medicine groups, and PCCs and their position in the trajectories of care and services[b]	2.36 ± 0.81	2.73 ± 0.65	0.67
The scope of practice of clinical nurse practitioners in PCC[b]	2.36 ± 1.12	2.64 ± 1.03	0.72
The scope of practice of social workers in PCC[b]	2.00 ± 0.77	2.55 ± 0.82	0.62
Interprofessional collaboration in PCC[b]	2.91 ± 0.83	3.00 ± 0.77	1.00
The care experience of people attending PCC[b]	2.64 ± 0.92	3.00 ± 0.63	0.62
The training sequence and the multi-level approach[b]	2.00 ± 0.77	2.55 ± 0.69	0.28

[a]Evaluated on a 0 to 10 scale from low intention (1) to strong intention (10)

[b]Evaluated on a 4-point Likert scale from low (1) to very high (4)

I am concerned that I will not have enough time [to fulfill my role as a trainer within my current tasks] (Trainer-Nurse 2).

As reported in Table 4, an increase for every item related to trainers' level of confidence to train nurses and social workers in PCCs was observed post-training.

Trainees

Table 5 shows the pre-post evaluation of trainees' confidence and demonstrated a general increasing trend for each item measured except regarding management modalities of PCCs, which decreased ($p=0.03$). The most significant trends were observed for the following items: integrating into the team ($p=0.08$), exercising collaborative leadership ($p=0.06$), and actively participating in analysis and problem-solving regarding the application of the guidelines ($p=0.09$). Qualitative data highlighted some elements that hindered the improvement of their confidence. Four trainees justified their decreased level of confidence by the misunderstanding of their role, while others raised that suboptimal collaboration with governance hinders their confidence:

We need support [from managers] to bring changes in the vision of medical delegation about the fields of practice of nurses (Nurse 4).
Some collaborative relationships will need to be improved to implement the strategies [promoted through training] (Social Worker 2).

Every item evaluated in regard to trainees' commitment to applying knowledge increased (Table 5). Trainees demonstrated a significant increase in their commitment to familiarizing themselves with the processes in their PCCs ($p=0.05$) and integrating themselves into the team ($p=0.01$). Trends also showed that they were more committed to taking on their role in the PCCs ($p=0.07$) and actively participating in analyzing and resolving problems related to applying the new clinical practice guidelines ($p=0.08$). Trainees identified some barriers to committing to applying knowledge, such as prioritization of clinical activities:

[My commitment] depends on my workload and the support [of my manager] to do it. (Nurse 4)

Table 5 Trainees' intention to apply knowledge and level of confidence to abilities assessed before and after the training

Item assessed	Pre- Mean ± SD	Post- Mean ± SD	*p-value*
Intent to apply the knowledge learned in the training course[a]	8.76 ± 1.32	7.86 ± 1.62	0.02
Currently, what is your level of confidence in your abilities to apply the following content:			
Become familiar with the operations of my PCC[b]	3.28 ± 0.65	3.52 ± 0.57	0.14
Understand the management process[b]	2.83 ± 0.85	3.28 ± 0.65	0.03
Clarify the modalities of clinical support and supervision[b]	3.00 ± 0.71	3.07 ± 0.80	0.73
To appropriate my role in PCC[b]	3.48 ± 0.51	3.66 ± 0.48	0.19
Updating the clinical approach[b]	3.28 ± 0.59	3.52 ± 0.57	0.12
Integrating into the team[b]	3.52 ± 0.51	3.76 ± 0.51	0.08
Provide collaborative leadership[b]	3.24 ± 0.69	3.59 ± 0.68	0.06
To actively participate in the analysis and resolution of problems related to the application of the new guidelines[b]	3.17 ± 0.80	3.52 ± 0.74	0.09
Attend appropriate clinical support sessions to be better accompanied in complex situations[b]	3.21 ± 0.68	3.34 ± 0.81	0.49
To understand the dynamics of the PCC, the professionals practicing there and the organizational structure[b]	3.17 ± 0.85	3.48 ± 0.78	0.15
Currently, to what extent am I willing to commit to the following training content:			
Become familiar with the operations of my PCC[b]	3.31 ± 0.66	3.65 ± 0.67	0.05
Understand the management process[b]	3.24 ± 0.69	3.38 ± 0.73	0.46
Clarify the modalities of clinical support and supervision[b]	3.24 ± 0.70	3.52 ± 0.74	0.15
To appropriate my role in PCC[b]	3.41 ± 0.63	3.72 ± 0.65	0.07
Updating the clinical approach[b]	3.41 ± 0.57	3.66 ± 0.61	0.13
Integrating into the team[b]	3.45 ± 0.57	3.83 ± 0.54	0.01
Provide collaborative leadership[b]	3.38 ± 0.62	3.66 ± 0.72	0.12
To actively participate in the analysis and resolution of problems related to the application of the guidelines[b]	3.28 ± 0.65	3.59 ± 0.68	0.08
Attend appropriate clinical support sessions to be better accompanied in complex situations[b]	3.28 ± 0.70	3.48 ± 0.69	0.26
To understand the dynamics of the PCC, the professionals practicing there and the organizational structure[b]	3.28 ± 0.75	3.55 ± 0.74	0.16

[a]Evaluated on a 0 to 10 scale from low intention (1) to strong intention (10)

[b]Evaluated on a 4-point Likert scale from low (1) to very high (4)

Qualitative data were inconsistent regarding trainees' commitment in interprofessional collaborative practices, as evidenced by these excerpts:

> *To our surprise, the PCC nurses regularly meet to discuss various topics, including more complex patient cases. They spontaneously included the social worker and perhaps will include the nutritionist in their next meetings. This reaction demonstrates that they understand the principle of putting the patient at the center and working in an interdisciplinary manner. So, for me, it's mission accomplished! (Patient trainer 2)*
>
> *The process of referring patients to nurses and social workers is an issue. Physicians and nurse practitioners do not know when or why to refer patients to nurses and social workers (Patient trainers).*

Despite their high commitment, trainees reported decreased intention to apply the knowledge learned in the enhanced TTT program (*p*=0.02) (Table 5). Two trainees reported priorities other than enhancing their professional practice, collaboration, and patient engagement, which influenced their intention.

Discussion

This study, combining quantitative and qualitative pre- and post-data, aimed to evaluate the effect of an enhanced TTT program to increase the knowledge, intention, commitment, and confidence of trainers and trainees (registered nurses and social workers) working in PCCs in applying primary care founding principles in their practice. To our knowledge, this study is one of the first to describe the effects of an enhanced TTT program on registered nurses and social workers in primary care. The data presented shows that the enhanced TTT program is an effective way to improve knowledge but, according to Kirkpatrick's level of learning, has more mixed effects on some items related to the intention and confidence of clinical trainers. The inclusion of patients as trainers, although essential, may be perceived at least as a barrier to be anticipated. These results lead us to the following observations.

First, the training seemed to improve future clinical trainers' knowledge of working in primary care with registered nurses and social workers in PCCs, which is consistent with the literature [23, 44]. Indeed, items related to the confidence level about the topics presented in the training increased (even if not significantly). However, the study described that evaluated items that decreased are related to the operationalization of the training and coaching or the research project itself.

We found that two elements could negatively influence trainers' confidence in their roles. The first element is the discomfort of meeting medical and clinical managers to explain their role and the enhanced TTT program. This discomfort may be explained by the fact that this was a task that the clinical trainers and patient trainers had never done. The silo-based and medico-administrative views of the clinical support structure in PCCs may have influenced trainers' perception of the importance of meeting with decision-making actors. However, these meetings are essential to promote adequate knowledge transfer and effectively initiate change using an integrated approach [32, 45, 46]. The innovators can anticipate this reluctance by offering direct support for these meetings and making them a specific training focus (how to deal with medical decision-makers). It remains essential, however, that trainers [47] become these vectors of change and promoters of innovation [44] and become visible to the clinicians in the settings in which they intervene. This presence legitimizes the role they play and facilitates the management of change, especially in geographically-dispersed or large-scale organizations [18].

The second element that could have negatively impacted the effectiveness of training is the inability of trainers to adequately tailor the intervention to the needs of the trainees and PCCs. Trainers must be aware of the unique context of each PCC and refrain from offering generic training, which would remove the innovative power of the intervention. Because we underestimated the skills needed to accomplish this task, the training offered did not adequately prepare trainers to adapt the training to variable contexts across PCCs [5, 48–53] in an effective and tailored way. This tailoring requires a high level of competence and an excellent knowledge of the clinical settings [35, 54], which may vary across trainers [35]. This could also explain the discrepancy between PCCs regarding trainee's engagement. To address this issue, any primary care TTT program must include longitudinal activities to foster the development of trainers' knowledge and confidence in applying their knowledge. These activities also prepare trainers to exercise leadership with clinical and decision-making stakeholders to improve learning outcomes [55]. We then could conclude that the training for trainers was appreciated and was appropriate for the content related to the four primary care founding principles but might not be appropriate for the one related to the implementation of the enhanced TTT program or the research project itself.

Second, at the beginning of this project, the clinical trainers proved that they needed to familiarize themselves with the role of patient trainers. Indeed, the active involvement of patients as trainers, and not just as witnesses of their life experiences, is infrequent and represents an innovation [56]. This ambitious collaborative vision requires an openness and a deep understanding of experiential knowledge [19], which characterizes a

real integration of patient expertise as its knowledge. It positions the patient not as a recipient of care nor as a witness but as a full partner who contributes to improving the skills of professionals in clinical settings. Some authors also point out that clinical and patient trainers need support to integrate the patient trainers adequately to assume their full role [57]. Data collected from the clinical trainers, however, describe that their sense of discomfort faded when they observed the added value of the patient's presence during their training and the training of trainees. However, despite the perceived added value of the patient trainer's role in training clinicians, we found this alliance challenging to operationalize in PCCs. Combining clinical trainers' schedules with patients' schedules is a challenge, as the pace of work and availability are different. Including a new trainer in a team requires time to get to know and recognize each other [58–60], a key principle of interprofessional collaboration. Moreover, including a trainer from outside healthcare institutions may represent a culture shock for some clinical trainers. Therefore, it seems essential to prepare clinical trainers to collaborate with patient trainers and provide them with strategies to overcome the potential barriers.

Thirdly, for trainees, all items increased significantly (except for one) or with a trend. Trainees' training appeared to be adequate despite being less appreciated. Although trainees obtained acceptable scores at levels 1 and 2 of Kirkpatrick's model, these results do not indicate a long-term change in practice. Indeed, many studies show favorable results following TTT programs without observing sustainable changes in practice [22, 23]. This is partly because changes are operationalized longitudinally, and ongoing support that extends beyond the training is needed. As training alone is not enough, trainers must be able to support trainees in making the training content their own. This support is more important in PCCs, where professionals feel professionally isolated from their peers for various reasons [18, 44, 61].

Strengths and limitations

This study is one of the first to include an enhanced TTT program provided by a team composed of clinicians and patients to support integrating new practice standards for health and social services professionals. Although the COVID-19 period delayed data collection up to six months after the intervention as planned, the presence of both quantitative and qualitative data allows us to make some suggestions. The triangulation of data sources and points of view brings richness and clarifications that explain the results.

Conclusions

The enhanced TTT program in a PCC, including patient trainers, is an innovative intervention centered on the very perspective of the Patient's Medical Home and comprehensive care [2] promoted by many healthcare organizations. Our evaluation process supported our enhanced TTT program's success as the initial goal was to help clinical trainees become more familiar with the four founding principles of primary care. The process used to create the enhanced TTT program, structure, and evaluation method can be used in other contexts. The crucial aspect is not the training content but how the TTT enables multiple professionals to receive training on different topics [24]. However, further work is needed to understand the long-term effects of enhanced TTT programs on primary care trainees and how these effects concretely translate into PCCs' performance and patient care.

Abbreviations
PCC   Primary care clinic
TTT   Train-the-trainer

Supplementary Information
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> **Supplementary Material 1: Additional file 1**. Self-reported questionnaire

Data availability
The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
We obtained ethical approval for the study from the *Comité d'éthique et de la recherche du Saguenay-Lac-Saint-Jean*, project number 2019-037 and informed consent was obtained from all participants.

Consent for publication
Not applicable.

Competing interests

Author details
[1]Department of Family Medicine and Emergency Medicine, Université de Sherbrooke, 2500, boul. de l'Université, Sherbrooke, QC J1K 2R1, Canada
[2]School of Social Work, Université de Sherbrooke, 2500, boul. de l'Université, Sherbrooke, QC J1K 2R1, Canada
[3]Integrated University Health and Social Services Centres of Saguenay–Lac-St-Jean, 305 Rue Saint Vallier, Chicoutimi, QC G7H 5H6, Canada
[4]Human and Social Sciences Department, Université du Québec en Abitibi-Témiscamingue, 663 1re Avenue, Val-d'Or, QC J9P 1Y3, Canada
[5]Department of Rehabilitation, Université Laval, 1050 Av. de la Médecine, G1V 0A6 Québec, QC, Canada
[6]Faculty of Nursing, University of Montreal, 2375, Chemin de la Côte-Sainte-Catherine, Montréal, QC H3T 1A8, Canada
[7]Charles-LeMoyne Research Center on Innovations in Health, Department of Community Health Sciences, Université de Sherbrooke, 2500, boul. de l'Université, Sherbrooke, QC J1K 2R1, Canada
[8]CubecXpert, Quebec, QC, Canada
[9]Faculty of Social Work, University of Toronto, 246 Bloor Street W, Toronto, ON M5S 1V4, Canada
[10]Faculty of Nursing, Memorial University of Newfoundland, 100 Signal Hill, St. John's, NL A1C 5S7, Canada
[11]Department of General Practice and Laboratory of Ergonomics and Epidemiology in Occupational Health, University of Angers, 40 Rue de Rennes, Angers 49100, France

References
1. Fondation canadienne pour l'amélioration des services de santé. Vers une stratégie des soins primaires pour le Canada. Ottawa, Canada: Fondation canadienne pour l'amélioration des services de santé; 2012.
2. Patient's Medical Home. The patient's medical home is the future of family practice in Canada 2022. https://patientsmedicalhome.ca/. [Accessed November 11 2021].
3. Barrett C, Mathews M, Poitras M-E, Norful AA, Martin-Misener R, Tranmer J, et al. Job titles and education requirements of registered nurses in primary care: an international document analysis. Int J Nurs Stud Adv. 2021;3:100044.
4. Lukewich J, Poitras M-E, Mathews M. Unseen, unheard, undervalued: advancing research on registered nurses in primary care. Pract Nurs. 2021;32(4):158–62.
5. Tadic V, Ashcroft R, Brown JB, Dahrouge S. The role of social workers in inter-professional primary healthcare teams. Healthc Policy = Politiques de sante. 2020;16(1):27–42.
6. Couturier Y, Lanoue S, Karam M, Guillette M, Hudon C. Social workers coordination in primary healthcare for patients with complex needs: a scoping review. Int J Care Coord. 2023;26(1):5–25.
7. Canadian Nurses Association. Interprofessional collaboration. Canada. p. 5.
8. College of Registered Nurses of Alberta. Interprofessional collaboration guidelines. Edmonton, Canada: College of Registered Nurses of Alberta 2023. p. 15.
9. Orchard C, Bainbridge L, Bassendowski S, Stevenson K, Wagner SJ, Weinberg L et al. A national interprofessional competency framework. 2010.
10. Ministère de la Santé et des Services Sociaux. Guide pratique à l'intention des infirmières cliniciennes qui travaillent dans un groupe de médecine de famille ou un groupe de médecine de famille universitaire. 2019.
11. Ministère de la Santé et des Services sociaux. Guide pratique à l'intention des travailleurs sociaux issus d'un établissement du réseau de la santé et des services sociaux et qui travaillent dans un groupe de médecine de famille ou un groupe de médecine de famille universitaire. 2019.
12. Seckler E, Regauer V, Rotter T, Bauer P, Müller M. Barriers to and facilitators of the implementation of multi-disciplinary care pathways in primary care: a systematic review. BMC Fam Pract. 2020;21(1):113.
13. McNeely J, Kumar PC, Rieckmann T, Sedlander E, Farkas S, Chollak C, et al. Barriers and facilitators affecting the implementation of substance use screening in primary care clinics: a qualitative study of patients, providers, and staff. Addict Sci Clin Pract. 2018;13(1):1–15.
14. Racic M, Pekez-Pavlisko T, Jokovic S. Barriers and facilitators for implementation of family medicine–oriented model of primary care in Bosnia and Herzegovina: a qualitative study. Int J Health Plann Manag. 2018;33(1):e378–90.
15. Benzer JK, Beehler S, Miller C, Burgess JF, Sullivan JL, Mohr DC, et al. Grounded theory of barriers and facilitators to mandated implementation of mental health care in the primary care setting. Depress Res Treat. 2012;2012:597157.
16. Bloch G, Rozmovits L. Implementing social interventions in primary care. Can Med Assoc J. 2021;193(44):E1696.
17. Rust C, Prior RM, Stec M. Implementation of a clinical practice guideline in a primary care setting for the prevention and management of obesity in adults. Nurs Forum. 2020;55(3):485–90.
18. Ohr SO, Maguire D, Lord N, Talluri C, Solman A. A unique model for developing continuing education resources for health professionals in geographically dispersed health organizations. J Continuing Educ Health Professions. 2021;41(3).
19. Pomey MP, Flora L, Karazivan P, Dumez V, Lebel P, Vanier MC, et al. [The Montreal model: the challenges of a partnership relationship between patients and healthcare professionals]. Sante publique (vandoeuvre-les-Nancy. France). 2015;27(1 Suppl):S41–50.
20. Bird M, Ouellette C, Whitmore C, Li L, Nair K, McGillion MH, et al. Preparing for patient partnership: a scoping review of patient partner engagement and evaluation in research. Health Expect. 2020;23(3):523–39.
21. Pomey M-P, Hihat H, Khalifa M, Lebel P, Néron A, Dumez V. Patient partnership in quality improvement of healthcare services: patients' inputs and challenges faced. Patient Experience J. 2015;2(1):29–42.
22. Pearce J, Mann MK, Jones C, van Buschbach S, Olff M, Bisson JI. The most effective way of delivering a train-the-trainers program: a systematic review. J Continuing Educ Health Professions. 2012;32(3):215–26.
23. Poitras ME, Bélanger E, Vaillancourt VT, Kienlin S, Körner M, Godbout I, et al. Interventions to improve trainers' learning and behaviors for educating health care professionals using train-the-trainer method: a systematic review and meta-analysis. J Contin Educ Health Prof. 2021;41(3):202–9.
24. Pearce J, Mann MK, Jones C, van Buschbach S, Olff M, Bisson JI. The most effective way of delivering a train-the-trainers program: a systematic review. J Contin Educ Health Prof. 2012;32(3):215–26.
25. Cross V, Larkins S. Management of chronic hepatitis B infection in the remote primary health care setting: the search for a suitable guideline. Aust J Rural Health. 2011;19(2):95–100.
26. Krist AH, Tong ST, Aycock RA, Longo DR. Engaging patients in decision-making and behavior change to promote prevention. Studies in health technology and informatics. 2017;240:284–302.
27. Gillam S, Newbould J. Patient participation groups in general practice: what are they for, where are they going? BMJ. 2016;352.
28. Kiran T, Tepper J, Gavin F. Working with patients to improve care. Can Med Assoc J. 2020;192(6):E125–7.
29. Lau R, Stevenson F, Ong BN, Dziedzic K, Treweek S, Eldridge S, et al. Achieving change in primary care—effectiveness of strategies for improving implementation of complex interventions: systematic review of reviews. BMJ open. 2015;5(12):e009993.
30. Brousselle A, Champagne F, Contandriopoulos A-P, Hartz Z. L'évaluation: concepts et méthodes: Deuxième édition. Les Presses de l'Université de Montréal; 2011.
31. Poitras ME, Couturier Y, Massé S, Doucet E, T Vaillancourt V, Poirier M-D. Implementation and evaluation of a train-the-trainer strategy to support the sustainability of evidence-based practice guides for family practice nurses and social workers in family medicine groups: a study protocol. BMC Fam Pract. 2022.
32. Graham ID, Logan J, Fau - Harrison MB, Harrison Mb Fau - Straus SE, Straus Se Fau -, Tetroe J, Tetroe J, Fau - Caswell W, Caswell W, Fau - Robinson N et al. Lost in knowledge translation: time for a map? The Journal of Continuing Education in the Health. 2006;26(1):13–24.
33. Kirkpatrick JD, Kirkpatrick WK. Kirkpatrick's four levels of training evaluation. Association for Talent Development; 2016.
34. Kirkpatrick J. An introduction to the new world Kirkpatrick® model. 2015. Newnan, GA: Kirkpatrick Partners, LLC. 2017.
35. Kienlin S, Poitras ME, Stacey D, Nytrøen K, Kasper J. Ready for SDM: evaluating a train-the-trainer program to facilitate implementation of SDM training in Norway. BMC Med Inf Decis Mak. 2021;21(1):140.
36. Armitage CJ, Conner M. Efficacy of the theory of planned behaviour: a meta-analytic review. Br J Soc Psychol. 2001;40:471–99.
37. Godin G. Les comportements dans le domaine de la santé. Les presses de l'Université de Montréal; 2013.

38. Warshaw PR, Davis FD. Disentangling behavioral intention and behavioral expectation. J Exp Soc Psychol. 1985;21(3):213–28.
39. Kirkpatrick D, Kirkpatrick J. Evaluating training programs: the four levels. Berrett-Koehler; 2006.
40. Kirkpatrick DL. Implementing the four levels: A practical guide for effective evaluation of training programs: Easyread super large 24pt edition: Read-HowYouWant. com; 2009.
41. Bandura A. Guide for constructing self-efficacy scales. Self-efficacy Beliefs Adolescents. 2006;5(1):307–37.
42. Praslova L. Adaptation of Kirkpatrick's four level model of training criteria to assessment of learning outcomes and program evaluation in higher education. Educational Assess Evaluation Account. 2010;22(3):215–25.
43. Huberman AM, Miles M, Saldana J. Qualitative data analysis: a methods sourcebook. The United States of America: SAGE; 2014.
44. Sator M, Holler P, Rosenbaum M. National train-the-trainer certificate programme for improving healthcare communication in Austria. Patient Educ Couns. 2021;104(12):2857–66.
45. Faija CL, Gellatly J, Barkham M, Lovell K, Rushton K, Welsh C, et al. Enhancing the behaviour change wheel with synthesis, stakeholder involvement and decision-making: a case example using the 'Enhancing the quality of psychological interventions delivered by telephone' (EQUITy) research programme. Implement Sci. 2021;16(1):53.
46. Maciver D, Hunter C, Johnston L, Forsyth K. Using stakeholder involvement, expert knowledge and naturalistic implementation to co-design a complex intervention to support children's inclusion and participation in schools: the CIRCLE framework. Children (Basel, Switzerland). 2021;8(3).
47. Cranley LA, Cummings GG, Profetto-McGrath J, Toth F, Estabrooks CA. Facilitation roles and characteristics associated with research use by healthcare professionals: a scoping review. BMJ Open. 2017;7(8):e014384.
48. D'Amour D, Oandasan I. Interprofessionality as the field of interprofessional practice and interprofessional education: an emerging concept. J Interprof Care. 2005;19(Suppl 1):8–20.
49. Beaulieu MD, Denis JL, D'Amour D, Goudreau J, Haggerty J, Hudon E, et al. Montréal: Fondation canadienne de la recherche sur les services de santé. Fonds de la recherche en santé du Québec. Ministère de la Santé et des Services sociaux.; 2006. L'implantation des Groupes de médecine de famille: le défi de la réorganisation de la pratique et de la collaboration interprofessionnelle : Étude de cas de cinq GMF de la première vague au Québec.
50. Poitras ME, Chouinard MC, Fortin M, Girard A, Crossman S, Gallagher F. Nursing activities for patients with chronic disease in family medicine groups: a multiple-case study. Nurs Inq. 2018:e12250.
51. Poitras ME, Chouinard M-C, Gallagher F, Fortin M. The description of nursing activities for patients with chronic disease in primary care settings: a practice analysis. Nurs Res. 2018;67(1):35–42.
52. Bernier ACM, Lacroix M, Poitras M-E. The expected, enacted and desired role of family practice nurses in family medicine groups as perceived by nurses and family physicians. Sci Nurs Health Practices / Sci infirmière et pratiques en santé. 2020;3(2):1–15.
53. Fraser MW, Lombardi BM, Wu S, Zerden LS, Richman EL, Fraher EP. Integrated primary care and social work: a systematic review. J Soc Social Work Res. 2018;9(2):175–215.
54. Mormina M, Pinder S. A conceptual framework for training of trainers (ToT) interventions in global health. Globalization Health. 2018;14(1):1–11.
55. Bonnie LHA, Visser MRM, Kramer AWM, van Dijk N. Insight in the development of the mutual trust relationship between trainers and trainees in a workplace-based postgraduate medical training programme: a focus group study among trainers and trainees of the Dutch general practice training programme. BMJ open. 2020;10(4):e036593-e.
56. Morin A, Couturier Y, Poirier MD, Vaillancourt T, Massé V, Tardif SD. The impact of patients as trainers on registered nurses' patient engagement in primary care clinics: a qualitative study. BMC Prim care. 2023;24(1):265.
57. Fraser C, Grundy A, Meade O, Callaghan P, Lovell K. EQUIP training the trainers: an evaluation of a training programme for service users and carers involved in training mental health professionals in user-involved care planning. J Psychiatr Ment Health Nurs. 2017;24(6):367–76.
58. Couturier Y, Belzile L. La collaboration interprofessionnelle en santé et services sociaux. Les Presses de l'Université de Montréal; 2018.
59. Reeves S, Pelone F, Harrison R, Goldman J, Zwarenstein M. Interprofessional collaboration to improve professional practice and healthcare outcomes. Cochrane Database Syst Reviews. 2017;(6).
60. Consortium pancanadien pour l'interprofessionalisme en santé. Référentiel national de compétences en matière d'interprofessionnalisme. 2010.
61. O'Donnell CA, Jabareen H, Watt GCM. Practice nurses' workload, career intentions and the impact of professional isolation: a cross-sectional survey. BMC Nurs. 2010;9(1):2.

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