


# Evaluation of the McGill-Tongji Blended Education Program for Teacher Leaders in General Practice: The importance of partnership and contextualization in International Primary Care Training Initiatives

Ziyue Wang<sup>1</sup>  | Xinxin Zhao<sup>2</sup> | Huixia Shen<sup>2</sup> | Hao Wang<sup>2,3</sup> | Gemma Cheng<sup>1</sup> | Ya Ning Gao<sup>1</sup> | Wenzhen Zuo<sup>1</sup> | Zhuyin Xu<sup>1</sup> | Francesco Avallone<sup>1,4</sup> | Anish K. Arora<sup>1</sup> | Manxi Guo<sup>1</sup> | Rachel Simmons<sup>1</sup> | David Lessard<sup>1</sup> | Theresa Beesley<sup>5</sup> | Jialin C. Zheng<sup>2</sup> | Bertrand Lebouché<sup>1,6</sup> | Howard Bergman<sup>1</sup>

<sup>1</sup>Department of Family Medicine, Faculty of Medicine and Health Sciences, McGill University, Montréal, Québec, Canada

<sup>2</sup>School of Medicine, Tongji University, Shanghai, China

<sup>3</sup>Department of General Practice, Shanghai Tongji Hospital, Shanghai, China

<sup>4</sup>Center for Outcome Research Evaluation, Research Institute of the McGill University Health Centre, Montreal, Québec, Canada

<sup>5</sup>Office of Accreditation and Education Quality Improvement, Faculty of Medicine and Health Sciences, McGill University, Montréal, Québec, Canada

<sup>6</sup>Chronic Viral Illness Service, Division of Infectious Diseases, Department of Medicine, McGill University Health Centre, Montreal, Québec, Canada

## Correspondence

Howard Bergman and Ziyue Wang, Department of Family Medicine, McGill University, 5858 Chem. de la Côte-des-Neiges, Montréal,

## Abstract

**Purpose:** Strong primary health care (PHC) systems require well-established PHC education systems to enhance the skills of general practitioners (GPs). However, the literature on the experiences of international collaboration in primary care education in low- and middle-income countries remains limited. The purpose of this study was to evaluate the implementation and perceived impact of the McGill-Tongji Blended Education Program for Teacher Leaders in General Practice (referred to as the “Tongji Program”).

**Methods:** In 2020–2021, the McGill Department of Family Medicine (Montreal, Canada) and Tongji University School of Medicine (TUSM, Shanghai, China) jointly implemented the Tongji Program in Shanghai, China to improve the teaching capacity of PHC teachers. We conducted an exploratory longitudinal case study with a mixed methods design for the evaluation. Quantitative (QUAN) data was collected through questionnaire surveys and qualitative (QUAL) data was collected through focus group discussions.

**Results:** The evaluation showed that learners in Tongji Program were primarily female GPs (21/22, 95%) with less than 4 years of experience in teaching (16/22, 73%). This program was considered a successful learning experience by most participants (19/22, 86%) with higher order learning tasks such as critical thinking and problem-solving. They also agreed that this

**Abbreviations:** COVID-19, coronavirus disease 2019; FGDs, focus group discussions; GP, general practitioner; HICs, high-income countries; LMICs, low- and middle-income countries; McGill DFM, McGill Department of Family Medicine; PHC, primary health care; QUAL, qualitative; QUAN, quantitative; TUSM, Tongji University School of Medicine.

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QC H3S 1Z1, Canada.  
Email: [howard.bergman@mcgill.ca](mailto:howard.bergman@mcgill.ca) and  
[ziyue.wang4@mail.mcgill.ca](mailto:ziyue.wang4@mail.mcgill.ca)

#### Funding information

China Scholarship Council,  
Grant/Award Number: 202000610047;  
McGill University; Fonds de recherche du  
Québec – Santé, Grant/Award Number:  
315852; Québec Ministry of Health;  
Canadian Institutes for Health Research,  
Strategy for Patient-Oriented Research  
Mentorship Chair; Global Health  
Scholars Program; Fonds de recherche du  
Québec-Santé, Grant/Award Number:  
311200

program helped them feel more prepared to teach (21/22 , 95%), and developed a positive attitude toward primary care (21/22 , 95%). The QUAL interview revealed that both the Tongji and McGill organizers noted that TUSM showed strong leadership in organization, education, and coordination. Both students and teachers agreed that by adapting training content into contextualized delivery formats and settings, the Tongji Program successfully overcame language and technology barriers.

**Conclusions:** Committed partnerships and contextualization were key to the success of the Tongji Program. Future research should focus on how international primary care education programs affect learners' behavior in their practice settings, and explore barriers and facilitators to change.

#### KEYWORDS

primary care, general practice, continuing professional development, contextualization, international partnership

## 1 | BACKGROUND

There is a global consensus that primary health care (PHC) is the foundation of the health system for delivering effective, equitable, and sustainable health services [1, 2]. This need is particularly acute in low- and middle-income countries (LMICs). However, the primary care training system in LMICs is often weak, leading to a lack of educational resources for PHC professional development, a shortage of qualified PHC health workers and general practitioners (GPs), a lack of trust in PHC sectors, and an ineffective primary care system [3, 4].

While an increasing number of LMICs have recognized the important role of primary care training in developing a sustainable healthcare system, there are very few successful examples of international collaboration in primary care training between high-income countries (HICs) and LMICs [4–7]. International partnerships in medical education have traditionally been characterized by HIC institutions owning and controlling the process, with little meaningful involvement from LMIC medical institutions [8–10]. Without long-term reciprocal collaborative partnerships in primary care training, it is difficult to understand training priorities in the LMIC primary healthcare context and maximize the long-term training impact. In addition, the implementation of international training programs has raised many questions about the institution's capacity to deliver and manage these programs, including differences in language, challenges in information technology infrastructure, and time zones [11].

In 2020–2021, the Department of Family Medicine at McGill University (McGill DFM, Montreal, Canada) and

Tongji University School of Medicine (TUSM, Shanghai, China) jointly implemented the McGill-Tongji Blended Education Program for Teacher Leaders in General Practice (also known as “Tongji blended learning program” or “Tongji program”) at Tongji University, Shanghai. This is a collaborative primary care education project tailored to improve the teaching capacity of GP teachers in China. Both McGill DFM and TUSM made great efforts to adapt this PHC training project into a practical international educational collaboration. In this paper, we discuss the evaluation of the implementation and the perceived impact of the Tongji blended learning program to highlight the experiences and lessons learned in this collaborative PHC training project.

## 2 | METHODS

### 2.1 | The program

In 2017, McGill DFM developed a 12-month blended distance education program named “Fundamental Topics for General Practice Teachers” for physicians who teach residents, medical students, and other learners in primary care settings (detailed description of the program is available elsewhere [12]). The objective of this program is to strengthen the foundation and enhance the leadership and teaching skills of family medicine faculty. The distance learning program consists of 12 modules. The modules primarily focus on faculty development (e.g., learning environment, providing feedback) and clinical skills improvement (e.g., doctor–patient relationship, management of chronic diseases). Each module consists

of three components: (1) recorded lectures (45 min) given by McGill DFM professors with interactive questions with associated reading materials; (2) written assignments for participants to contextualize the learning to their practice; (3) virtual face-to-face meetings between the professors, instructors, and participants to further discuss the content of the module. In the original design, the program also offered an optional 1-week enrichment program at the McGill DFM in Montreal to apply online learning to the participant's context. However, due to the coronavirus disease 2019 (COVID-19) pandemic, the enrichment program was canceled.

In 2019, McGill DFM and TUSM signed a Memorandum of Understanding to customize the “Fundamental Topics for General Practice Teachers” that would meet Tongji's requirements. This program was renamed the “McGill-Tongji Blended Education Program for Teacher Leaders in General Practice.” This program aimed to enhance the teaching capacity of Tongji teaching leaders and community physicians in family medicine and primary care. Between August 2020 and August 2021, the program was implemented in three community health centers (teaching sites) affiliated with Tongji University in Shanghai. In the first “icebreaker” face-to-face session on August 24, 2020, we organized a live exchange with the learners and teachers from Tongji and McGill on lessons from primary care and COVID-19. On September 10, 2021, 22 GP learners successfully completed their training and a completion ceremony was held for them at Tongji University.

## 2.2 | Evaluation methodology

We conducted an exploratory longitudinal case study with a mixed methods design for the evaluation. Qualitative (QUAL) and quantitative (QAUN) data were collected in parallel. All QAUN surveys and QUAL interviews were conducted in the last 2 months of the training program (August and September 2021). Then QUAL data were analyzed and used to contextualize the findings from QAUN data.

We conducted and recorded 8.5-h focus group discussions (FGDs) using the Zoom platform (Zoom Video Communications Inc.) to collect QUAL data from four different groups of stakeholders involved in the Tongji Program: (1) 22 participants enrolled in the program; (2) the five Tongji education leaders and organizers; (3) the six McGill professors and instructors; and (4) the three McGill program organizers. The interview guides included questions regarding their motivation to participate, the perceived impact of this program on their knowledge and behaviors, and their learning, teaching, or

organizing experiences. The discussion guidelines are available in Supporting Information S1: File 2. We used a hybrid thematic analysis approach [13] to analyze the QUAL data. The analytical framework was developed using the Rubric for eLearning Tool Evaluation [14] and emerging themes from the FGDs to ensure that the researchers were sensitive to topics that were not initially included in the coding framework. Two independent researchers (Z. W. and F. A.) used NVivo (QSR International) for coding and cross-checked the results to resolve discrepancies. The research team met weekly to discuss emerging themes and resolve disagreements.

We also collected QUAN data using a three-part self-administered online questionnaire that included (1) demographic information, (2) an adapted version of the McGill Longitudinal Family Medicine Experience questionnaire [15] to capture participants' perceived impact, and (3) the Community of Inquiry Survey Instrument [16] on the teaching presence, social presence, and cognitive presence of this program. The full questionnaire is available in Supporting Information S1: File 3. Both the McGill Longitudinal Family Medicine Experience questionnaire and the Community of Inquiry Survey Instrument have been tested and validated in multiple research settings, including primary care research settings [17, 18]. Descriptive statistics were used to describe the characteristics of the QAUN data using Stata 14.0 (StataCorp).

To triangulate QAUN and QUAL data, we brought both QUAN and QUAL results for analysis and comparison (known as “merging” [19]). In Section 3, we reported QAUN and QUAL results together under the following themes using a weaving approach [19]: (1) background of the learners; (2) perceived impact; (3) learning experiences; (4) partnership, coordination, and contextualization.

## 3 | RESULTS

### 3.1 | Background of the learners

All 22 participants in the Tongji project were GPs. A total of 21 out of 22 participants (95.5%) were female, and 16 out of 22 (72.7%) had less than 4 years of teaching experience. All participants held a bachelor's or higher degree in medicine, and 40.9% (9/22) of them graduated from elite universities listed in the Chinese government's “World First Class University Program” [20, 21]. 81.8% (18/22) of the participants completed their residency program in family medicine, with more than half (10/19, 52.6%) graduating after 2017. The majority of clinicians in the cohort (15/22, 68.2%) had prior experience in online/blended learning before. On average, participants

spent 11% of their day teaching (range 1%–50%). Of the 22 participants, 15 (68.2%) have trained less than 10 residents, while 5 (22.7%) GPs have trained more than 21 residents/students (see Table 1).

### 3.2 | Perceived impact of the project

The QUAN surveys indicate that the Tongji program received high overall satisfaction from learners. 95.5%

(21/22) of the participants reported that the knowledge and skills they had learned through the program were relevant to their careers, helped them feel more prepared for teaching, improved their ability to communicate with patients, and fostered a positive attitude towards primary care. Although most participants agreed that this program had improved their teaching skills, less than half reported being able to use the pedagogy they learned, such as direct observation (40.9%) or role modeling (40.9%), (see Table 2).

**TABLE 1** Characteristics of the learners.

Demographic and job characteristics			Number N = 22 (%)
Age, mean (range), y			34 (28–46)
Sex: female			21 (95.5)
Education	Graduated from elite universities		9 (40.9)
	Having a nonclinical health education background		2 (9.1)
Residency	Type of residency program	Family medicine	21 (95.5)
		Others	1 (4.5)
	The year finished residency	Before 2015	9 (40.9)
		Between 2015 and 2019	13 (59.1)
	Length of residency	1 year	4 (18.2)
		2 years	18 (81.8)
The proportion of time spent at work as follows, mean	Physicians at primary care centers		(55.8)
	Physicians at hospitals		(4.4)
	Administrators		(13.8)
	Research		(9.6)
	Teaching		(11.0)
	Others		(5.4)
Working experience	Clinical experience	1–4 years	3 (13.6)
		5–8 years	10 (45.5)
		≥9 years	9 (40.9)
	In management positions		3 (13.6)
Teaching and online learning experience	Paid to teach/supervise		6 (27.3)
	Teaching experience	<1 year	6 (27.3)
		2–4 years	10 (45.5)
		≥5 years	6 (27.3)
	Number of students	≤5	8 (36.4)
		6–10	7 (31.8)
		11–20	2 (9.1)
		≥21	5 (22.7)
Had participated in blended learning programs			15 (68.2)

**TABLE 2** Perceived impact by Tongji learners.

Perceived impact of the project			Number N = 22 (%)
Satisfaction	Overall, agree	I would recommend the program to others	18 (81.8)
		The program was an appropriate and valuable experience	19 (86.4)
		The lecture and engagement question components were useful	18 (81.8)
		The face-to-face components were useful	18 (81.8)
	Professor, agree	The professors were knowledgeable	21 (95.5)
		The professors provided an open welcoming environment	20 (90.9)
	Knowledge and skills, agree	The knowledge and skills I learned were relevant to my practice	21 (95.5)
		Gave me a good understanding of McGill family doctors' work	20 (90.9)
		Enhanced my understanding of the doctor-patient relationship	21 (95.5)
		Helped me feel more prepared for teaching/supervising	21 (95.5)
		Contributed to my understanding of faculty development	19 (86.4)
		Contributed to my understanding of chronic care management	20 (90.9)
		Improved ability to communicate with patients	21 (95.5)
		Professionalism, agree	Reinforced commitment to be a physician
	Taught me the importance of multidisciplinary teamwork		22 (100.0)
	Identifying myself as a medical care provider		22 (100.0)
Developed social accountability	22 (100.0)		
Knowledge to practice	Positively impacted my attitude toward primary care	21 (95.5)	
	Used direct observation in teaching	9 (40.9)	
	Improved teaching style	16 (72.7)	
	Improved communication skills	14 (63.6)	
	Implemented role modeling in teaching	9 (40.9)	

The focus group data further revealed the complexity of this gap, which is related to the discrepancy between education and practice: Learners appreciated the opportunity to communicate with their Canadian peer models in this project, which helped develop their sense of professional pride in primary care. However, despite the potential benefits, cultural and healthcare system differences still present barriers to the implementation of these

practices in teaching. Some participants suggested that the content of the Tongji program should be more contextualized, while others argued for maintaining its “Canadian” character: they argued that there is no simple solution for teaching primary care in China, and that this program should focus on broadening learners’ horizons and encouraging dialogues/reflections on integrating the training content with China’s reality.



The main thing is that, there are some differences between Eastern and Western cultures. And, I think the most important thing is that the health system in two countries are different. (We have) too few general practitioners... I saw Canadian teachers introducing their consultation process, like how many patients he sees in a day. We feel so envious, and we also hope to have so much time to communicate with patients, but the real situation does not allow it...

—A junior GP at Tongji University (female)

In fact, I think an advantage of this course is that the world is diversified... I do not recommend that this course be completely localized. The physicians in these communities may not have the opportunity to use these views now, not because of their personal problems, it's a systemic problem. I think still very meaningful to let people learn it—it's something new to us. No matter as an eye-opener or whatever, it might inspire your practice later.

—A senior GP at Tongji University (female)

### 3.3 | Learning experiences

The results of the Community of Inquiry Survey Instrument indicated that over 90% of participants agreed or strongly agreed that their learning experiences had a high level of teaching presence, social presence, and cognitive presence (Table 3). This training was conducted during the COVID-19 pandemic. As frontline workers, learners were burdened with urgent tasks such as COVID-19 testing, vaccination, and home quarantine monitoring. According to records from the Moodle platform, learning time was distributed throughout weekday working hours, off-hours, and holidays. Despite this extreme circumstance, all but one participant (21/22, 95.5%) completed all training activities on time. Tongji learners agreed that this program had effective teaching styles and content delivery format that supported higher order learning tasks such as critical thinking and problem-solving. They found that the virtual face-to-face meetings were effective in applying learned concepts to practice through discussion. However, the QUAL survey also identified room for improvement in teacher-student communication: Many participants did not utilize the assignment or discussion board due to their busy schedule, which impeded teacher-student communication.

I think the assignments are quite important for us because through the assignments we have an understanding of what they know, so we can then prepare our answers depending on how people answer the assignments. But unfortunately, it's kind of uneven sometimes when we tell them we have the deadline for the assignments. A lot of people do it at the last minute.

—A middle-aged senior lecturer at McGill University (female)

I think there was a period when the COVID-19 hit, we worked every day. The doctors were very tired, and then every Friday night we also had to rush to Tongji (to attend the training), once in the evening after the course it was almost 10:00 p.m. because we have to go home after the course, some of us get home at 10:30 p.m. or 11:00 p.m., very tired, and then the next day you have to go back to work.

—A young GP at Tongji University (female)

### 3.4 | Partnership, coordination, and contextualization

During our interview, organizers, teachers, and education leaders from McGill and Tongji discussed the commitment and leadership shown by TUSM teams in organizing, training, and coordinating efforts which moved the collaboration towards egalitarian forms of knowledge exchange. For example, during the F2F discussion, Tongji University assigned a senior education lead to each study site to facilitate the discussion. The organizers at TUSM viewed this joint program as an important opportunity for a close and long-term partnership with McGill DFM. However, the primary care centers and GPs at Tongji University were less involved in the organizational process such as course design and goal setting.

During focus groups, McGill teachers and organizers noted that the new Moodle platform used in the Tongji project worked much better than in previous blended learning projects organized by McGill DFM. All the videos on Moodle have English audio with Chinese subtitles, and all the face-to-face sessions were conducted in Mandarin by Mandarin-speaking McGill professors, which created a better environment for communication. In addition, organizers also introduced the process by which the

**TABLE 3** Community of inquiry survey instrument.

<b>The community of inquiry survey instrument</b>			<b>Number N = 22 (%)</b>	
Teaching presence, agree or strongly agree	Design and organization	Professors clearly communicated important topics	20 (90.9)	
		Professors clearly communicated important goals	21 (95.5)	
		Clear instructions on how to participate	21 (95.5)	
	Facilitation	Professors clearly communicated important due dates	Professors clearly communicated important due dates	22 (100.0)
			Professors were helpful in identifying areas of agreement/disagreement	21 (95.5)
			Professors were helpful in guiding the class	22 (100.0)
		Professors helped to keep participants engaged	Professors helped to keep participants engaged	21 (95.5)
			Professors helped participants in a way that helped me to learn	22 (100.0)
			Professors encouraged participants to explore new concepts	22 (100.0)
			Professors reinforced a sense of community	21 (95.5)
		Direct instruction	Professors helped to focus the discussion	22 (100.0)
			Professors provided helpful feedback	22 (100.0)
			Professors provided feedback in a timely fashion	21 (95.5)
Social presence, agree or strongly agree	Affective expression	Gave me a sense of belonging	21 (95.5)	
		Formed distinct impressions of some participants	22 (100.0)	
		Web-based communication was excellent for social interaction	21 (95.5)	
	Open communication	Felt comfortable conversing through online media	22 (100.0)	
		Felt comfortable participating in discussions	22 (100.0)	
		Felt comfortable interacting with other participants	22 (100.0)	
	Group cohesion	Felt comfortable disagreeing with others	21 (95.5)	
		Felt my point of view was acknowledged	21 (95.5)	
		Online discussions developed a sense of collaboration	20 (90.9)	
Cognitive presence, agree or strongly agree	Triggering event	Problems posed increased my interest in class	20 (90.9)	
		Class activities piqued my curiosity	22 (100.0)	
		Felt motivated to explore content related questions	22 (100.0)	
	Exploration	Used a variety of information sources to explore problems	22 (100.0)	
		Brainstorming helped me resolve questions	21 (95.5)	
		Online discussions helped me appreciate different perspectives	21 (95.5)	
	Integration	Combining new information helped me answer questions	22 (100.0)	
		Learning activities helped me construct explanations	21 (95.5)	
		Reflection and discussions helped me understand fundamental concepts	22 (100.0)	
	Resolution	I can describe how to apply the knowledge created in this program	22 (100.0)	

TABLE 3 (Continued)

The community of inquiry survey instrument	Number N = 22 (%)
Developed solutions to class problems that can be applied in practice	21 (95.5)
I can apply the knowledge created in this program to my work or other nonclass related activities	22 (100.0)

McGill DFM customized this 12-month blended distance education program and reorganized its content to adapt to Tongji's requirements and priorities.

As for the community (health service center), they themselves may not be very motivated to complete this task. They may need to ask by higher managers from upper level teaching departments to participate before it can be implemented.

—A middle-aged program organizer at Tongji University (female)

My colleagues and I were involved in this project from the very beginning; we visited McGill's clinical teaching environment. We are also involved in the discussion of the project, such as the topic and the sequencing of the modules.

—A middle-aged program organizer at Tongji University (female)

First of all, there was the first group with Shenzhen. We had the face to face with the instructor and there was a communication problem in terms of the language. And then we have some technical problems, too. Initially, people were not able to connect. With Tongji, we did improve a lot.

—A middle-aged senior lecturer at McGill University (female)

## 4 | DISCUSSION

In this mixed methods study, we evaluated the implementation and the perceived impact of the Tongji blended learning program. Our evaluation results shown that the Tongji program addressed many of the challenges facing the academic medicine community,

such as providing high-quality primary care training in LMICs, developing meaningful medical education partnerships between HIC institutions and LMIC institutions, and navigating the language and technical barriers of cross-country initiatives. To our knowledge, this is the first study to evaluate a multi-institutional and longitudinal blended learning program in primary care between HICs and LMICs to enhance the leadership and teaching capacity of primary care faculty.

Primary care has been an evolving field worldwide over the past three decades [22–24] and international collaboration in medical education is no longer a novel concept [25, 26]. However, the literature on the experiences of international collaboration in primary care education in LMIC remains limited. To the best of our knowledge, the only two examples of HIC-LMIC collaboration in the primary care education literature are the initiatives between the University of Calgary and the National University of Laos [4, 6], and the University of Toronto's Brazilian and Chilean PHC training [7]. Although both projects mentioned the importance of adaptation or partnership, neither of them provided a rigorous evaluation of how these practices enhanced the impact of their training. In their comprehensive report in 2018 [2], Rouleau et al. [23] examined the development of family medicine in seven countries around the world. They identified four “meta-enablers” in the development of primary care in all seven countries: (1) effective champions; (2) committed partnerships; (3) political will; (4) adaptability of primary care in a given setting. Our evaluation results supported Rouleau et al.'s [23] second and fourth “meta-enablers” findings. Given the resonance observed between our findings and the broader literature [2, 24], the following two lessons that emerged from the evaluation of the McGill-Tongji Blended Education Program may be applicable to other institutions seeking to improve their primary care training capacity.

This study provided important insights into the implementation of international collaboration in primary care education. The first lesson learned from the Tongji program and a number of collaborations between McGill and other Chinese medical institutions is the significance of partnership [27]. Before the launch of the Tongji



program, McGill DFM had already collaborated with Chinese medical institutions on several blended training initiatives, which served as a foundation for initiating a more comprehensive partnership. From January 2017 to December 2017, six community health centers and 31 learners in Shenzhen participated in a similar distance learning program based on the partnership between Shenzhen Community Health Association and McGill DFM [28]. The evaluation of the Shenzhen Program provided valuable insights and lessons that helped McGill DFM to revise and redesign subsequent programs in China, including the three-city program in 2019 (Wuhan, Zhengzhou, and Xining), and the Tongji program in 2020. TUSM also valued the opportunity to co-deliver the learning program instead of solely procuring external training, which ensured the successful implementation of the Tongji program. During the development of Tongji program, a Joint Education Committee (five members from Tongji and five members from McGill) met monthly to discuss the objectives and implementation of the training. TUSM organizers also established various communication channels for the learners, including online questionnaires, WeChat groups, and FGDs to provide feedback, raise concerns, report technical issues, and send notices to prepare for discussions.

Adapting the international training program to the local context is another important lesson. The Shenzhen blended learning program was delivered in English because local leaders believed that English training would improve the learners' English language skills. The program used the learning management system of McGill (MyCourses), and all instructors, facilitators, and organizational staff were professors and staff from McGill DFM. However, the evaluation revealed that participants encountered numerous technical and connectivity issues. Teaching in English also created barriers for many participants to understand the lecture and express their opinions during discussions. The Tongji Project has implemented the following strategies to remove these barriers. First, to eliminate language barriers, all teaching materials were translated into Chinese. Mandarin-speaking professors and residents from McGill DFM were recruited to facilitate virtual face-to-face meetings with Chinese GP learners. Second, to eliminate the technology barriers, McGill DFM replaced the MyCourses system with a Moodle learning system designed by a Chinese company with servers in China, which greatly improved access for Chinese learners. Third, the evaluation and continuous improvement of training content is crucial for success. Since the beginning of the series of blended learning programs in China, McGill DFM developed rigorous assessment plans for these programs. These evaluations enable educators and learners to learn from each other and further customize the program with additional topics based on the learners' requirements

(e.g., the pedagogy of critical thinking, clinical reasoning and communication skills). Nevertheless, 27% of our participants still found some content incompatible with their practice context in China (e.g., well-developed primary care teams, student complaint policy). We recognize that achieving real change in primary care in China will require a long-term commitment to learning. The development of Tongji program itself is an example of this learning process. It is encouraging that the participants of Tongji program also agree that this training has altered their attitudes towards primary care, and they are willing to facilitate this process of change.

The evaluation has several limitations. First, our evaluation focuses on the participants' perceptions of program content and organization, to explore program implementation. It does not explicitly assess learning outside the context of the program, such as enhancements in teaching skills or behavioral changes in teaching. Second, the number of participants in these trainings is relatively small and all of these trainings so far were conducted in larger cities in China. Since the digital literacy of GPs and the practice of community health centers may vary across different regions of China, our conclusion may not be applied to the entire country. Third, our self-administered survey may cause recall bias or social desirability bias (given the fact that these participants were active teachers). More in-depth training and evaluation in larger and more diverse primary care settings are needed in the future to modify the practices or test the effects of training programs. Fourth, it is worth noting that our study only includes one male participant. While it is true that females constitute over 75% of health workers at community health centers in China [29], future studies should aim to attract more male participants in training programs. In the end, it should be noted that cultural difference is still an important barrier in our training. Further research could focus on overcoming cultural differences in educational cooperation.

## 5 | CONCLUSIONS

In conclusion, our study shows that it is feasible and useful to implement a primary care education program to improve the leadership and teaching capacity of GP teachers through international collaboration by developing committed partnerships and an adaptive teaching model. Future research should focus on how international primary care education programs affect learners' long-term behavior in their practice settings, and explore barriers and facilitators to change.

### AUTHOR CONTRIBUTIONS

**Ziyue Wang:** Conceptualization; formal analysis; data curation; investigation; software; visualization; writing—

original draft; writing—review and editing. **Xinxin Zhao**: Conceptualization; investigation; resources; validation; project administration; writing—review and editing. **Huixia Shen**: Conceptualization; investigation; resources; validation; project administration; writing—review and editing. **Hao Wang**: Validation; project administration; writing—review and editing. **Gemma Cheng**: Validation; project administration; writing—review and editing. **Ya Ning Gao**: Validation; investigation; project administration; writing—review and editing. **Wenzhen Zuo**: Validation; project administration; writing—review and editing. **Zhuyin Xu**: Validation; project administration; writing—review and editing. **Francesco Avallone**: Methodology; investigation; software; formal analysis; validation; writing—review and editing. **Anish K. Arora**: Methodology; investigation; formal analysis; validation; writing—review and editing. **Manxi Guo**: Validation; project administration; writing—review and editing. **Rachel Simmons**: Validation; project administration; writing—review and editing. **David Lessard**: Methodology; formal analysis; validation; visualization; writing—review and editing. **Theresa Beesley**: Methodology; validation; writing—review and editing. **Jialin C. Zheng**: Conceptualization; resources; validation; project administration; writing—review and editing. **Bertrand Lebouché**: Methodology; validation; visualization; writing—review and editing. **Howard Bergman**: Conceptualization; resources; funding acquisition; validation; project administration; supervision; writing—review and editing.

## ACKNOWLEDGMENTS

The authors would like to thank all the participants of this study. They would also like to thank Dr. Serge Vicente from McGill University for their insightful comments on statistical analysis.

## CONFLICT OF INTEREST STATEMENT

Bertrand Lebouché has received research support and consulting fees from ViiV Healthcare, Merck, and Gilead. The remaining authors declare no conflict of interest. The funder of the study had no role in study design, data collection, data analysis, data interpretation, or writing of the manuscript.

## DATA AVAILABILITY STATEMENT

The datasets used and/or analyzed during the current study are available from the corresponding author, Howard Bergman, at [howard.bergman@mcgill.ca](mailto:howard.bergman@mcgill.ca) upon reasonable request.

## ETHICS STATEMENT

The Research Ethics Office of the Faculty of Medicine and Health Sciences at McGill University (Approval

Number: A04-E16-21A (21-04-043)) and the Medical and Biological Research Ethics Committee at Tongji University (Approval Number: 2021tjdx051) provided ethical approval for this evaluation.

## INFORMED CONSENT

Informed consent was obtained from all individual participants included in the study. Verbal informed consent was obtained before the interview.

## ORCID

Ziyue Wang  <http://orcid.org/0000-0003-1998-898X>

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

**How to cite this article:** Wang Z, Zhao X, Shen H, Wang H, Cheng G, Gao YN, et al. Evaluation of the McGill-Tongji Blended Education Program for Teacher Leaders in General Practice: the importance of partnership and contextualization in International Primary Care Training Initiatives. *Health Care Sci.* 2024;3:238–48. <https://doi.org/10.1002/hcs2.107>