Advances in Medical Education and Practice

Dovepress
Taylor & Francis Group

Open Access Full Text Article

ORIGINAL RESEARCH

Reflecting on the Implementation of United Kingdom (UK) General Practitioner Training Models in China: Highlights From a Train-the-Trainer Pilot Program

Faguang Luo[1,*], Mengyuan Chen[2,*], Yongba Chen[1,*], Huayan Huang[2], Wenfeng Zhan[2], Lian Chen[2], Dan Xu[3], Bo Lv[1,2]

[1]Guangdong Cardiovascular Institute, Guangdong Provincial People's Hospital, Guangdong Academy of Medical Sciences, Guangzhou, 510080, People's Republic of China; [2]Department of General Practice, Guangdong Provincial People's Hospital (Guangdong Academy of Medical Sciences), Southern Medical University, Guangzhou, 510080, People's Republic of China; [3]Department of General Practice Research and International Collaboration, Curtin Medical School/Curtin School of Population Health, Faculty of Health Sciences, Curtin University, Perth, Australia

*These authors contributed equally to this work

Correspondence: Bo Lv; Dan Xu, Email gdlvbo@163.com; daniel.xu@curtin.edu.au

Purpose: The rising number of Chinese general practitioners is placing pressure on the Chinese Health Care system to ensure the quality of training for competent general practitioners (GPs) to meet the significantly increased clinical service demand. To achieve the internationally recognized training standard, this project is collaborating with the most advanced general practitioner training system in UK, which has excellent track record of innovative research for co-designing train-the-trainer program. This program aims to reflect on the effective implementation of innovative training models in the context of Chinese GPs training system, ultimately aiming to improve the trainers' capability in training the future Chinese general practitioners.

Methods: This study was a cross-sectional survey with an online questionnaire seeking feedback from the GP teachers and trainers who attended the train-the-trainer program featuring co-designed online and offline teaching.

Results: All participants were general practitioners; average age 42.5±5.41 years, including 65% female, 65% consultant general practitioners, 60% general practitioners with PhD, average years of clinical practice being 17.7±6.96, average years of teaching being 6.0±1.41, average hours of teaching weekly being 2.1±0.85, and average number of residents trained being 39.6±51.87. "Webex project (online teaching)" received 70% approval among the participants as "Smart eLearning project (self-online learning and testing)" received 80%. The comparison analysis in demographic and baseline teaching experience between the teacher-dominated group and the student-dominated group found that there were no significant differences in age, gender, professional title, academic qualifications, years of employment, teaching experience, average weekly teaching hours, and the number of residents trained ($P>0.05$). There was significant reduction in the use of "traditional theoretical teaching" after the training ($P<0.005$).

Conclusion: The train-the-trainer pilot program has achieved significant outcomes. The changing of teaching philosophy from adult learning perspectives has been highlighted with the progression from a trainer-centered model to a trainee-centered model for training competent general practitioners.

Keywords: train-the-trainer, teaching general practitioner, adult learning principles

Background and Introduction

The discipline of general practice has entered an exciting new era of development for education and training with the Chinese government's recent publication of statements and white papers to support general practitioners' education and training. These papers include the "Guiding Opinions of the General Office of the State Council on Accelerating the Innovative Development of Medical Education",[1] the "Guiding Standards for the Establishment of General Practice

Received: 5 December 2024
Accepted: 23 May 2025
Published: 5 June 2025

Departments in Standardized Training Bases (General Hospitals) for Resident Physicians",[2] the A series of Chinese national policies such as "Opinions on the Implementation of General Practice Teacher Training (Trial)",[2] and the "Opinions of the General Office of the State Council on Reforming and Improving the Incentive Mechanism for the Training and Use of General Practitioners".[4] The team of general practitioners has since grown rapidly, and the goal of having 2–3 general practitioners per 10,000 people by the end of 2020 has been achieved ahead of schedule.[5] However, the clinical competency of general practitioners (GPs) is still questionable, in particular with the rapidly aging population placing more urgent demands on general practitioners who have already been overloaded with the common and complex chronic diseases. It is now a real priority to train more competent general practitioners who are "good at treating minor diseases, good at diagnosing serious diseases, good at treating serious diseases with a multidisciplinary approach, and good at managing complex chronic diseases".[1] The Chinese national training system for general practitioners is still in the early developmental phase, which is lacking a mature training system and still using outdated teaching models. There is an urgent need to adopt or introduce some of the successful general practitioner training models from countries and regions of the world with internationally recognized standards. The UK is one of those countries with the most advanced general practitioner system including outstanding training, excellent clinical service, and innovative research in which the international benchmark is set for training general practitioners.[6] The GP training model is introduced early into the undergraduate GP placement curriculum with the student-centered teaching model during the students' pre-intern clinical placement,[7] GP placement with external clinical teaching visit,[8] GP placement with GP trainee fellow supervising,[9] and GP placement with aged care facility visit.[10] To achieve the internationally recognized training standard, Guangdong Provincial People's Hospital collaborated with the British Lira Health Research Institute to co-design a train-the-trainer project exploring ways to introduce some of the innovative teaching models used by the UK general practitioner training system into the Chinese general practitioner training system. Thus, the aim of this co-designed pilot project is to reflect on the effective introduction of some UK general practitioner training models in the context of Chinese general practitioner training system. Ultimately, this project draws on the UK experience of innovative general practitioner training models with an aim to improve the trainers' capability in training the future Chinese general practitioners.

Materials and Methods

Study Design and Setting of Participants

This is a cross-sectional survey as well as a pilot study with a limited number of 20 participants. All participants were recruited from the pool of general practice teachers and trainers who attended the British Lira general practice teacher training program (train-the-trainer program) for Guangdong Provincial People's Hospital. These teachers and trainers are from various specialties and disciplines at Guangdong Provincial People's Hospital and community general practice clinics. A year-long training program for these teachers and trainers is based in the UK, and the details of the train-the-trainer program are co-designed with the trainers into two parts: offline teaching and online teaching.

Offline Teaching

Offline teaching is given by the UK teachers on site with several well-designed courses. These courses include "Interrogation Skills", "Breaking Bad News Skills", "Fundamental Principles of General Practice", "Consultation Role Play", "Feedback Role Play", "Clinical Practice for Interns", "Difficult Learners", "Principles of Adult Learning", "The Importance of Learning Environment", "Planning and Design of Teaching Courses", and "Clear Learner Needs". These courses adopt a roundtable trainee-centered teaching model in an interactive discussion forum between trainers and trainees. Prior to these courses, "traditional theoretical teaching" has always been the main teaching model with the didactic-lecture style and trainer-centered approach.

Online Teaching

Online teaching adopts two novel forms including Webex project (online teaching) and Smart eLearning project (independent online learning and testing). The Webex project allows the UK teachers and trainers to teach online by demonstrating their clinical expertise and sharing their clinical experiences, and complete evaluation feedback emails in

a timely manner immediately after class. The Smart eLearning project encourages trainees to conduct independent online learning and testing, involving long text reading and post-reading tests on 56 topics in all the major disciplines. Regular scheduled assessments are planned with each subject to monitor the progress of learning. On completion of the 56 topics' scheduled assessments, trainees can be issued with an individual British Lira training certificate.

Offline and Online Teaching Schedule

Offline teaching is a 4-day full-time course conducted by British medical education teams of teachers and trainers. Online teaching is a 1-year online course. The Webex program is conducted through regular email-scheduled Webex classes that students can participate in online. The Smart eLearning project requires students to independently complete the reading and assessments of each topic in their own time before the deadline, as well as pass the final exam. The British Lira Training Certificate can only be obtained by completing all three parts of the program and meeting all the standard requirements.

Data Collection

To investigate the impact of the co-designed train-the-trainer program on their learning of teaching practice, this study applied an online questionnaire in this cross-sectional survey, which is a validated survey instrument used in previous studies.[7–10] At the end of the study, the online questionnaires were emailed to the participants to seek feedback on the different teaching models' impact on their future teaching practice. The information of participants' social demographic and teaching experience information was also collected through the online questionnaire.

Data Analysis

SPSS 18.0 statistical analysis software was used for statistical analysis. Collected data were expressed as mean ± standard deviation, and independent sample *t* test was used for difference comparison. Accumulated data were expressed as frequencies, and chi-square test was used to compare differences. $P<0.05$ was considered to be statistically significant different.

Ethics

Ethical approval was granted by the Ethics Committees of Guangdong Provincial People's Hospital, Guangdong Science Academy, Guangzhou, China.

Consent for Participation

Informed written consent was obtained from all participants via electronic invitation including informed consent with publication of participants' anonymized responses.

Results

All 20 participants completed the questionnaire feedback, the response rate was 100%, and a total of 20 valid completed questionnaires were received. Demographic and baseline teaching experiences information of study participants are summarized in Table 1.

The average age of all participants was 42.5±5.41 years. Among them, 65% are female, 10% are chief physicians, and 65% are deputy chief physicians. Doctoral degrees account for 60%. The average years of employment are 17.7±6.96 years, the average years of teaching experience are 6.0±1.41 years, and the average weekly hours of teaching are 2.1 ±0.85 hours. The average number of residents supervised and trained by the teachers and trainers are 39.6±51.87.

Teaching model feedback on British Lira general practice teacher training program is shown in Table 2.

For the "Webex project (online teaching)", 25% of the participants strongly agreed and 45% agreed. For the "Smart eLearning project (online self-learning and testing)", 35% of the people strongly agreed and 55% agreed. A total of 90% of the participants agreed that the knowledge and skills gained from the pilot program are helpful to the teaching practice of general practitioners.

Table 1 Demographic and Baseline Information of Study Participants

Characteristics	Results (N=20)
Age, years old	42.5±5.41
Female, N (%)	13 (65)
Professional title, N (%)	
Archiater (Senior Consultant)	2 (10)
Associate chief physician (Junior Consultant)	13 (65)
Attending physician (Registrar)	4 (20)
Resident	1 (5)
Education, N (%)	
Doctor (PhD)	12 (60)
Master	4 (20)
Undergraduate (Bachelor)	4 (20)
College for professional training	0 (0)
Major, N (%)	
General practice	5 (25)
Rheumatology, immunology	1 (5)
Gynecology and obstetrics	1 (5)
Cardiovascular medicine	1 (5)
Spinal surgery	1 (5)
Endocrinology and diabetes	1 (5)
Psychiatry	1 (5)
Ophthalmology	1 (5)
General medicine	1 (5)
Urology	1 (5)
Dermatology	1 (5)
Oncology	1 (5)
Infectious diseases	1 (5)
Neurology	1 (5)
Pediatrics	1 (5)
Gastrointestinal surgery	1 (5)
Years of employment	17.7±6.96
Years of teaching experience	6.0±1.41
Average weekly teaching hours	2.1±0.85
Number of residents supervised and trained	39.6±51.87
Teaching model, number (%)	
Trainer-centered model	5 (25)
Trainee-centered model	15 (75)

Table 2 Teaching Model Feedback on General Practice Teacher Training Program

Teaching Model	Results (N=20)
1. Webex project (online teaching) is helpful to you, N (%)	
Agree very much	5 (25)
Agree	9 (45)
Uncertain	5 (25)
Disagree	1 (5)
Totally disagree	0 (0)

(*Continued*)

Table 2 (Continued).

Teaching Model	Results (N=20)
2. Advantages of Webex project (network teaching) (multiple choices), N (%)	
More attendees	9 (45)
Flexible with time and space	18 (90)
Improve students' independent learning ability	11 (55)
Cost effectiveness	17 (85)
Other	1 (5)
3. Disadvantages of Webex project (network teaching) (multiple choices), N (%)	
The program is difficult	5 (25)
Students are required to have prior experience and background knowledge.	12 (60)
Not conducive to in-depth learning	9 (45)
Learning outcome is difficult to evaluate	14 (70)
Other	1 (5)
4. Smart eLearning Project (autonomous online learning and testing) helps you, N (%)	
Agree very much	7 (35)
Agree	11 (55)
Uncertain	2 (10)
Disagree	0 (0)
Totally disagree	0 (0)
5. Advantages of Smart eLearning Project (autonomous online learning and testing) (multiple choices), N (%)	
More attendees	11 (55)
Flexible with time and space	18 (90)
Improve students' independent learning ability	17 (85)
Cost effectiveness	13 (65)
Other	0 (0)
6. Disadvantages of Smart eLearning Project (autonomous online learning and testing) (multiple choices), N (%)	
The program is difficult	9 (45)
Students are required to have prior experience and background knowledge.	13 (65)
Not conducive to in-depth learning	9 (45)
Learning outcome is difficult to evaluate.	9 (45)
Other	0 (0)
7. The following courses in the program are helpful to improve the doctor–patient relationship in China (multiple choices), N (%)	
Risk factors affecting health	8 (40)
Healthy lifestyle education	12 (60)
Breaking bad news	16 (80)
Nutrition and health	6 (30)
History-taking skills	16 (80)
8. Trainers and teachers have extensive teaching experience, N (%)	
Strongly agree	14 (70)
Agree	4 (20)
Uncertain	2 (10)
Disagree	0 (0)
Strongly disagree	0 (0)
9. Trainers and teachers are always demonstrating professionalism with excellent applied knowledge and clinical skills, N (%)	
Strongly agree	12 (60)
Agree	6 (30)
Uncertain	2 (10)
Disagree	0 (0)
Strongly disagree	0 (0)

(*Continued*)

Table 2 (Continued).

Teaching Model	Results (N=20)
10. The knowledge and skills gained from the program are helpful to the teaching practice of general practitioners, N (%)	
Strongly agree	10 (50)
Agree	8 (40)
Uncertain	2 (10)
Disagree	0 (0)
Strongly disagree	0 (0)

The differences in demographic and baseline teaching experience information between the teacher-dominated group and the student-dominated group are shown in Table 3.

The comparison analysis between the two groups found that there were no statistically significant differences in age, gender, professional title, academic qualifications, years of employment, prior teaching experience, average weekly teaching hours, and the number of residents supervised and trained ($P>0.05$).

The changes of teaching model used before and after general practice teacher training program are shown in Table 4.

After the training program, the most significant finding was that the number of people who chose "traditional theoretical teaching" dropped from 19 people (95%) before the training program to 5 people (25%) after the training program, with statistically significant difference ($P<0.005$). There was a significant increase in adopting the online self-learning model after the training course ($P<0.027$).

Table 3 Data Showing the Differences in Demographic and Baseline Teaching Experience Information Between the Teacher-Dominated Group and the Student-Dominated Group

Characteristics	Group 1 (Mainly Teachers, Supplemented by Students)	Group 2 (Mainly Students, Supplemented by Teachers)	P value
Age, years old	41.4±2.07	42.87±6.15	0.613
Female, N (%)	4 (80)	9 (60)	0.417
Professional title, N (%)			0.501
Archiater (Senior Consultant)	0 (0)	2 (13.3)	
Associate chief physician (Junior Consultant)	3 (60)	10 (66.7)	
Attending physician (Registrar)	2 (40)	2 (13.3)	
Resident	0 (0)	1 (6.7)	
Degree, N (%)			1
Doctor (PhD)	3 (60)	9 (60)	
Master	1 (20)	3 (20)	
Bachelor (undergraduate course)	1 (20)	3 (20)	
College for professional training	0 (0)	0 (0)	
Years of employment	17±4.85	17.93±7.67	0.803
Years of teaching experience	6.2±0.84	5.93±1.58	0.725
Average weekly teaching hours	2.2±1.10	2.07±0.80	0.771
Numbers of junior doctors and residents supervised	36.4±53.36	40.67±53.22	0.878

Table 4 Teaching Model Used Before and After General Practice Teacher Training Program

Project	Before Training, N (%)	After Training, N (%)	P value *Meaning P<0.05
Traditional theory teaching	19 (95)	5 (25)	<0.005*
Problem-based learning	15 (75)	18 (90)	0.212
Homework and assignments	5 (25)	6 (30)	0.723
Specific learning objectives driven	12 (60)	9 (45)	0.342
Online self learning	7 (35)	14 (70)	0.027*
Didactic lectures	13 (65)	14 (70)	0.736
Network learning online and offline	3 (15)	7 (35)	0.144
Others (topic report, MOOC, simulation education)	1 (5)	2 (10)	0.548

Discussion

This study invited teachers and trainers from various specialties and general practice departments of Guangdong Provincial People's Hospital as well as community general practice clinics to be the 20 trainee participants. These teachers and trainers are experienced representatives in clinical teaching. Before participating in the British Lira general practice teacher training program, up to 95% of teachers and trainers chose the traditional theoretical teaching model, in which knowledge and skills of teaching practice is delivered or shared with students and trainees via the traditional teacher-led consultation with students the passive receivers. Then, the year-long general practice teacher training program has come at the right time to revolutionize the concepts and models of modern teaching practice in China. The traditional theoretical teaching model has dropped out of the mainstream teaching model with only 25% of the teachers and trainers now applying the model in comparison to 95% of the teachers and trainers using the model before the program. This major shift of teaching model for teaching practice has gone through an innovative progression in the UK's health system. As the United Kingdom has implemented the National Health Service (NHS) since 1948, general practitioners are playing a central role for more than 90% of the clinical services in the NHS system. All general practitioners are the most important members in the reform of the NHS, especially in the training of future competent general practitioners by well-trained and competent teachers and trainers.[6,11] We need to constantly think about how to train future general practitioners with clinical competence by applying innovative teaching models.

The UK general practice teacher training program places great emphasis on applying the "Adult Learning Principles" when designing the program to be delivered for the Chinese teachers and trainers. The rapid development of technological revolution, knowledge expansion, and educational innovation requires general practice teachers and trainers to continue their professional learning through teaching the junior colleagues by using the "Adult Learning Principles".[12] The concept of adult learning principles started with Eduard C. Lindeman's pioneer paper in 1926, "The Meaning of Adult Education", which laid the foundation for the systematic research about how adults learn. Subsequently, educators and psychologists have contributed to the development of many theories and hypotheses about the learning characteristics of adults.[13] Andragogy, the study of adult education, was a relatively novel terminology, which has been extensively researched by Malcolm. S. Knowles, the USA founding father of adult education.[14] A framework is designed to highlight the characteristics of adult learning based on the following assumptions:[15,16] 1) The need to learn is about understanding the learner's expectations through needs assessments of the learners, which are teachers and trainers in our study with the expectations to improve their teaching capability of training the future Chinese general practitioners through the UK general practitioners teachers training program. 2) The learner's self-concept is about being capable of self-direction. Recent research indicated that teachers should help adult learners to become self-directed learners that are able to control, motivate, supervise, and adjust their own learning.[17] The design of our study has focused in such point that the majority of the teachers and trainers prefer to use the non-traditional theory teaching model, which encourages active learning over passive learning as the strategy for becoming self-directed learners. 3) The role of learner's experiences is about the inclusion of techniques that take into consideration the learner's experiences including both constructive and positive as well as negative experiences such as including bias and assumptions that usually make them

resistant to new ideas and alternative learning models. However, constructivist learning theories suggest that learners' novel experiences are better when connected with previous experiences and knowledge for better understanding, retaining, and then utilization.[18] In our study, the learners' experiences are their previous teaching experiences, which showed no statistically significant differences between the two groups of teachers and trainers. Further study is planned with more participants to examine the impact of the previous experiences on adopting a novel teaching model. 4) Active learning is conceptualized to include readiness to learn, orientation to learning, and motivation to learning. In our study, the 20 recruited teachers and trainers are keen and ready to learn new teaching models from the training program. The teachers and trainers' feedback on the novel teaching models confirmed that they were well oriented to apply the novel models effectively in their routine teaching practice. Most of the teachers and trainers were well motivated to use the novel teaching model as the majority of the participants gave up the traditional theory teaching model to replace it with the novel teaching models. These motivators as stated by most of the participants include external motivators like better jobs, promotions, and higher salaries, as well as the most powerful motivators for learning being internal pressures like the desire for increased job satisfaction, self-esteem, and quality of life.[18] As shown in in our study, all participants were ready, oriented, and motivated to take on the active learning role, which has been shown as actively involved in the learning process of being involved in more than listening, developing own skills, being involved in higher-order thinking (analysis, synthesis, and evaluation), being engaged in activities (eg, reading, discussion, and writing), and finally exploration of one's own values and attitudes.[19] 5) Reflective learning is to stress the importance of fostering reflection about what occurs and why it occurs, personal beliefs and feelings, mistakes, gaps, and possible variables, in order to achieve meaningful learning outcomes during teaching practices.[18,20,21] This has been clearly demonstrated with the participants' feedback in our study. As adult learning principles have been used in medical education for more than 40 years, many academic scholars have since built upon Knowles' foundation work to explore the fundamental principles of adult learning, the roots of adult education, the advancement of adult learning, and the practical applications of adult education.[22] Canadian scholars have emphasized the importance of lifelong learning and practice in combination with modern adult education practices.[23] Taken together, the central concept of adult education and learning is about changing traditional education models to adult education models. The traditional education model is mainly based on teacher-centered teaching where learners passively receive knowledge. Adult education respects the diversity of students with focus on assisting students to complete the transition from dependence to independence and eventually improve students' self-learning ability. Adult education models can adapt to the current rapidly changing world, which is consistent with the findings of our study showing that most general practitioner teachers believe that general practitioner training should be student-centered and teacher-facilitated, like the adult education model. Furthermore, traditional education focuses on teachers' experience and teaching material experience, while adult education focuses on transforming individual experience into learning resources. The intrinsic motivation of traditional education is based on pressure, that is, the pressure of failing or failing in exams, and the knowledge learned is not very practical.[23] The intrinsic motivation of adult education is based on needs, centered on practicality, solving practical problems, and improving clinical competency.

The British Lira general practitioner teachers' training program adopts online training models, including Webex project (online teaching) and Smart eLearning project (independent online learning and testing), and has achieved good training outcomes, with 14 people (70%) indicating approval for the Webex project, and 18 people (90%) indicating approval for the Smart eLearning project.

These two online education models used in this program are developed by the team who manage the massive open online course (MOOC) system in the UK. As an open course based on the Internet for distance learning, MOOC can replace face-to-face teaching and is characterized by being flexible, open, and online.[24] MOOC can accommodate a significant number of learners at one time with unlimited scalability, which was supported by nearly half of the participants in our study. Secondly, MOOCs can reduce economic burden and break down geographical barriers to achieve access equity of education. In our study, 90% of the respondents believed that flexibility with time and location is very important, especially for clinicians with heavy workloads. Most participants believe that the two online teaching models are cost-effective, with 17 people (85%) agreeing for the Webex project (online teaching) and 13 people (65%) agreeing for the Smart eLearning project (self-online learning and testing). Furthermore, a recent study showed that MOOC on preoperative preparation for bariatric surgery improved patients' knowledge, skills, and adherence in

perioperative care.[25] Another study found that MOOCs can assist COPD patients in self-management.[26] One of the widely used MOOC platforms "Future Learn and Coursera" is becoming the UK's first globally oriented MOOC platform.[27] A survey on the Future Learn platform found that MOOC has the potential to provide health education to the rapidly aging elderly.[24] However, MOOCs can also have potential drawbacks, which is shown in a high registration rate but a low pass rate. A UK study found that the completion rate of MOOC was less than 10%.[28] In addition, MOOCs require learners to have strong independent learning capabilities, and individual different levels of capability among learners may lead to different learning outcomes. An analysis of the first batch of MOOC dental implant learners from the University of Hong Kong found that learners taught by different teaching models had different grades and pass rates.[29] A prospective cohort study comparing "hybrid learners" (College offline and MOOC learning online) and "social learners" (MOOC learning online only) found that hybrid learners performed better than social learners ($P<0.05$).[30] Looking back in our study, the participants including teachers and trainers undertook the UK general practitioners training program as the "hybrid learners", who changed their teaching from "traditional theoretical teaching" to "novel teaching model", which is featured in the hybrid model of offline and online teaching and learning. This change indicates a progression of teaching philosophy from a teacher-centered to a student-centered model, simply translating into the modern concept of students as leaders and teachers as facilitators in practical context.

Limitations

There are two limitations in this study. Firstly, all study participants are employees from the pool of general practice teachers and trainers at Guangdong Provincial People's Hospital and cannot fully represent all the general practice teachers in China. Secondly, the limited sample size of 20 participants in the training program will make readers less convinced about the conclusion of the study.

Conclusion and Future Perspectives

The British Lira general practice teachers and trainers training program has achieved significant outcomes. The changing of teaching philosophy from adult learning perspectives has been highlighted with the progression of trainer-centered model to trainee-centered model. These changes have inspired the future trainers and researchers to implement these novel teaching models in everyday teaching through undertaking a large-scale study to validate the successful introduction and implementation of the novel teaching models in this pilot study.

Data Sharing Statement

Data supporting the findings of this study are available from the corresponding author upon reasonable request. All data for this study, which were not publicly available, were securely stored in the research drive with encrypted and password-protected files at Curtin University.

Acknowledgments

Faguang Luo, Mengyuan Chen, and Yongba Chen are co-first authors for this study. We acknowledge the staff at Curtin Medical School, Curtin University, Australia, and Guangdong Provincial People's Hospital, Guangzhou, China.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the submission of the article to the journal "*Advances in Medical Education and Practice*"; and agree to be accountable for all aspects of the work.

Funding

This work was supported by the 2022 teaching quality engineering project (residential training teaching reform project) of Guangdong Provincial People's Hospital.

Disclosure

The authors report no conflicts of interest in this work.

References

1. guiding opinions of the general office of the state council on accelerating the innovative development of medical education. *Gazette of the State Council of the People's Republic of China*. 2020. 28: 27–31.
2. Notice on issuing the guiding standards for the establishment of general medicine departments in resident physician standardized training bases (general hospitals) (trial). *Bulletin of the National Health Commission of the People's Republic of China*. 2018. 08: 109–110.
3. Implementation opinions on general medicine teacher Training. *China Rural Medicine*. 2013. 20(06):87–88.
4. Opinions of the General Office of the State Council on reforming and improving the incentive mechanism for the training and use of general practitioners. *Gazette of the State Council of the People's Republic of China*. 2018. 4: 9–13.
5. National Health Commission of the People's Republic of China. Letter of reply to proposal no. 0565 (Medical and Sports Category No. 069) of the Second Session of the 13th CPPCC National Committee. 2020. Available from: http://www.nhc.gov.cn/wjw/tia/202008/bfb7e60061234293b66f62f7e0b68cd9.shtml. Accessed May 29, 2025.
6. Laurence B. Reforms in the English national health service: the role of the general practitioner. *Lancet Oncology*. 2013;14(10):923–925. doi:10.1016/S1470-2045(13)70356-5
7. Zhang J, Tang Y, Feng S, et al. Collaborative teaching and curricular integration in pre-intern clinical placements: insights from the greater bay area. *Adv Med Educ Pract*. 2024;15:1027–1037. doi:10.2147/AMEP.S471782
8. Feng S, Yang D, Zhang K, et al. Reflecting on experiences of senior medical students' external clinical teaching visits in general practice placements: a pilot study. *Adv Med Educ Pract*. 2024;15:207–216. PMID: 38525099; PMCID: PMC10961076. doi:10.2147/AMEP.S454467
9. Feng S, Yang D, Zhang K, et al. Reflecting on experiences of GP trainees teaching senior medical students during GP placement: a pilot study. *Austr J Genel Prac*. 2024.
10. Xu D, Feng S, Yang D, et al. Reflecting on students' experiences of an innovative teaching model during aged care visit in clinical placements: a qualitative pilot study. *Adv Med Educ Pract*. 2023;14:1339–1346. PMID: 38046262; PMCID: PMC10693279. doi:10.2147/AMEP.S436905
11. Greaves F, Harris M, Goodwin N, et al. The commissioning reforms in the English national health service and their potential impact on primary care. *J Ambul Care Manage*. 2012;35(3):192–199. doi:10.1097/JAC.0b013e31823e838f
12. Reed S, Shell R, Kassis K, et al. Applying adult learning practices in medical educationCurr Probl Pediatr Adolesc. *Health Care*. 2014;44(6):170–181. doi:10.1016/j.cppeds.2014.01.008.
13. Taylor DC, Hamdy H. Adult learning theories: implications for learning and teaching in medical education: AMEE guide no. 83. *Med Teach*. 2013;35(11):e1561–72. doi:10.3109/0142159X.2013.828153
14. Knowles LY. *Modern Adult Education Practice*. People's Education Press; 1989:9–10.
15. Bullock I, Davis M, Hampshire S, Lockey A, Mackway-Jones K, Mitchell S, Wieteska S. Pocket guide to teaching for medical instructors. In: *Advanced Life Support Group and Resuscitation Council (UK)* 3rd Ed. Blackwell and BMJ Books; 2016:1–15.
16. Knowles MS, Holton RA, Swanson RA. *The Adult Learner*. 7th ed. Burlington (MA): Elsevier; 2011:64–69.
17. Roberts TV, Gustavs J, Mack HG. Becoming an expert: a review of adult learning theory and implications for vocational training in ophthalmology. *Clin Experiment Ophthalmol*. 2012;40(5):519–526. doi:10.1111/j.1442-9071.2011.02716.x
18. Norman GR, Schmidt HG. The psychological basis of problem-based learning: a review of the evidence. *Acad Med*. 1992;67(9):557–565. doi:10.1097/00001888-199209000-00002
19. Bonwell CC, Eison JA. *Active Learning: Creating Excitement in the Classroom (J-B ASHE Higher Education Report Series AEHE)*. Washington DC: Jossey-Bass; 1991:1–4.
20. Schön DA. *Educating the Reflective Practitioner*. 1st ed. San Francisco (CA): Jossey-Bass; 1987:3–22.
21. Schön DA. The reflective practitioners. How professionals think in action. *Basic Books*. 1983.
22. Swanson RA. The adult learner: the definitive classic in adult education and human resource development. *Industrial & Commercial Training*. 1998;45(7):107–109.
23. Grace AP. Lifelong learning chic in the modern practice of adult education: historical and contemporary perspectives. *Journal of Adult & Continuing Education*. 2005;11(1):62–79. doi:10.7227/JACE.11.1.6
24. Liyanagunawardena TR, Williams SA. Elderly learners and massive open online courses: a review. interact. *J Med Res*. 2016;5(1):e1. doi:10.2196/ijmr.4937
25. Pottier E, Boulanouar L, Bertrand M, et al. A MOOC about bariatric surgery improves knowledge and promotes patients'. *Soft Skills. Obes Surg*. 2020;30(4):1600–1604. doi:10.1007/s11695-019-04143-5
26. Padilha JM, Machado PP, Ribeiro AL, Ribeiro R, Vieira F, Costa P. Easiness, usefulness and intention to use a MOOC in nursing. *Nurse Educ Today*. 2021;97:104705. doi:10.1016/j.nedt.2020.104705
27. Parr C. *Futurelearn Reveals Big Plans to Deliver Moocs on the Move*. Times Higher Education; 2013.
28. Foley K, Alturkistani A, Carter A, et al. Massive open online courses (MOOC) evaluation methods: protocol for a systematic review. *JMIR Res Protoc*. 2019;8(3):e12087. doi:10.2196/12087
29. Lan M, Hou X, Qi X, Mattheos N. Self-regulated learning strategies in world's first MOOC in implant dentistry. *Eur J Dent Educ*. 2019;23(3):278–285. doi:10.1111/eje.12428
30. Jia M, Gong D, Luo J, Zhao J, Zheng J, Li K. Who can benefit more from massive open online courses? A prospective cohort study. *Nurse Educ Today*. 2019;76:96–102. doi:10.1016/j.nedt.2019.02.004