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Continuing medical education needs of general practitioner trainers in Sichuan, China: A cross-sectional study

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Abstract

Background

General practitioner trainers play an important role in developing the clinical and educational competence of future general practitioners. This study aimed to identify the continuing medical education needs, educational priorities, perceived barriers, and preferred educational approaches of general practitioner trainers participating in a provincial core training programme in Sichuan Province, China.

Methods

A descriptive cross-sectional survey was conducted among general practitioner trainers attending a provincial core training programme in Sichuan Province. An online questionnaire collected information on demographic characteristics, educational priorities, perceived usefulness of professional competencies, evaluation of current training, barriers to teaching development, preferred teaching methods, training formats, assessment approaches and factors influencing training effectiveness. Descriptive statistics and weighted ranking analyses were performed using IBM SPSS Statistics version 26.0.

Results

A total of 115 trainers completed the survey. Most participants worked in community health centres or township hospitals (91.3%, n = 105), and 66.1% (n = 76) had fewer than three years of teaching experience. Clinical thinking in general practice was identified as the highest educational priority by 56.5% (n = 65) of participants and achieved the highest weighted competency score (9.10). Heavy clinical workload (87.0%, n = 100) and insufficient training time (70.4%, n = 81) were the most frequently reported barriers. Demonstration teaching (81.7%, n = 94), case-based learning (79.1%, n = 91), visits to general practitioner teaching bases (93.0%, n = 107), and problem-based learning assessment (80.0%, n = 92) were the preferred educational approaches. Most participants (87.8%, n = 101) were willing to participate in future continuing medical education activities.

Conclusions

General practitioner trainers prioritised the development of clinical reasoning, communication and practice-oriented competencies over theoretical knowledge alone. Future continuing medical education programmes should incorporate interactive teaching strategies, workplace-based learning, structured assessment and organisational support to strengthen teaching competence and improve the primary health care education.

Background

General practitioners (GPs) play a key role in supporting strong primary health care (PHC) systems due to the role they play in providing lifelong, person-centred, comprehensive and continuous care. A skilled and well-trained GP workforce not only enhances access to health services but also has a positive impact on increased levels of prevention and chronic disease management and helps achieve more effective and efficient health systems.[1, 2] But, many countries still are subject to GP shortage while, population ageing and the ever mounting burden of chronic diseases have made demand even higher. Such pressures have also proved to underscore the need for GPs to keep their knowledge, clinical skills and competencies to underpin high quality practice through continuing education (CME).[3]

Primary health care has been given a leading role in the national health reform with the Healthy China 2030 plan and national family doctor contracting service, both of which depend on a competent and sustainable GP workforce. The goal of national policy is to reach the goal of 5 GPs/10,000 inhabitants by 2030 and significant efforts have been done to establish residency training, transition planning and CME. These efforts have not yet reached a level of equality across the regions when it comes to education and training in GP's.[4] National assessments of the CME programmes delivered from 2016 to 2023 recorded 3,815 CME programmes that were eligible, yet showed there was a significant geographical imbalance in the provision of CME programmes, with those programmes mainly located in the eastern, economically developed, provinces whereas the western provinces were relatively under-resourced. The review also demonstrated that although a majority of programmes were concerned with patient care and medical knowledge, these were significantly less well addressed in programmes than were communication skills, professionalism and educational competencies. Moreover, only 5.6% of all national CME programmes had been developed specifically for GP trainers with little attention paid to faculty development in established programmes.[5, 6]

Programmes of continuing medical education are effective both by virtue of what they contain and because they involve topics that concern the learner's professional needs. Educational courses based on the expressed needs of students have proven in past research to be relevant and effective. Cardiovascular disease, respiratory disease and digestive disease were defined as the most important areas for education for GPs in Tibet and bedside teaching was the preferred mode of learning. It was found that CME programs should be produced as per the needs of a health system and must be flexible enough to be up-to-date and adjusted continuously as no new or other requirements arise in a healthcare context.[7] An interactive learning that integrated small group learning, simulated patient, and workplace-based teaching was also effective and highly appreciated by the participants and thus yielded improved education results, comparative to the classroom lecture-based training as reported in an evaluation of a Star Family Doctors Training Programme in Sichuan.[8] Later, a large, cross-sectional survey of 508 rural-facing GPs in Chongqing showed significant differences in training preferences based on the characteristics of the GP, and that the highest educational needs were for clinical research and evidence-based practice which were also the least frequently delivered, reinforcing the importance of a flexible and tailored approach to CME programming, rather than a one-size-fits-all.[9]

These studies have developed a good understanding of the educational needs of practising GPs, but far less of GP trainers. Trainers face two roles that include their patients and their residents, their medical students and their own patients and the evaluation of their students' clinical abilities.[10] Therefore, their training needs go beyond clinical knowledge to clinical reasoning, training, assessment of learners, assessment of feedback, and leadership and management in education. The competency of trainers very well may affect the future quality of general practitioners as China continues to grow GP education. However, there remains limited evidence of the ongoing learning requirements of GP trainers, particularly for GP trainers in western China, where the resources for educational learning are the most lacking.[11–13]

The government of Sichuan Province has made significant efforts to make inroads in general practice training with provincial Core General Practitioner training programmes and other faculty development efforts. However, limited knowledge available about the educational priorities of GP trainers who undertake such training programs, the obstacles GP trainers face from an educational competency perspective or what learning approaches GP trainers find most effective.[14, 15] Addressing these gaps is crucial to the design of teaching programmes that will aid trainers to enhance general practice teaching.

Therefore, we conducted this cross-sectional study to assess the continuing medical education needs of GP trainers in Sichuan Province, China. Specifically, we examined their professional characteristics, priority learning needs, perceived barriers to educational development, and preferences for teaching methods, training formats and assessment approaches to provide evidence for the design of future faculty development programmes.

Methods

Study design

We conducted an observational, cross-sectional survey to identify the continuing medical education (CME) needs of general practitioner (GP) trainers in Sichuan Province, China. This study was conducted as part of the provincial Core General Practitioner Training Programme organized by Sichuan Provincial Health Commission, this helps to boost the teaching ability of GPs (who carry on educating residents and medical students at the Primary Health care institutions) every year. Data was gathered via an anonymous online questionnaire.[7]

Study settings and participants

Eligible participants were GP trainers involved in the education and training of residents or medical students in primary health care settings in Sichuan Province. Potential participants attending the conference on 19 April 2026 were approached in person and invited to participate voluntarily.

Participation was restricted to individuals who met the study eligibility criteria and agreed to complete the questionnaire.

Questionnaire development

The questionnaire has been drafted keeping in mind six steps in curriculum development as suggested by Kern and with cross-referencing towards World Organization of Family Doctors (WONCA) core competency framework for general practice, with adaptation to take into consideration the role of a GP trainer in teaching his/her students.[16–19] The questionnaire aimed to pinpoint educational priorities, educators' perceived barriers to professional development and preferences for educational delivery.

The draft questionnaire was independently reviewed by a multidisciplinary expert panel (comprising two GP teachers, one public health expert and two admin personnel from Primary Health Care) for content relevance, clarity and comprehensiveness. Following expert review small amendments were made to further improve wording and content. The questionnaire was then tested with 10 GP trainers in a pilot study to examine the clarity, feasibility and time for completing the questionnaire. Pilot test results were not included in the final analyses.

The final questionnaire consisted of 19 items under six sections, each designing the demographics and profession characteristics, priority CME needs, perceived importance of competencies and knowledge, perceived barriers to educational development, teaching methods, training formats, evaluation and assessment approaches and factors influencing training effectiveness, on a five-point Likert scale.

Data collection

Data were collected on 19 April 2026. Potential participants attending the conference were approached in person and invited to participate in the survey. Those who agreed to participate accessed the online questionnaire by scanning a QR code that directed them to the survey hosted on Sojump. Participants completed the questionnaire independently using their own electronic devices. Participation was voluntary, and responses were collected anonymously. Multiple responses from the same participant were restricted, and all questionnaire items were mandatory. No personally identifiable information was collected.[7]

Ethical considerations

Ethical approval

for the study was obtained from the Ethics Committee on Biomedical Research, West China Hospital of Sichuan University (approval no. 2021 – 155). The study was conducted in accordance with the Declaration of Helsinki. Participants were informed of the purpose of the study before taking part, and

electronic informed consent was obtained before they accessed the questionnaire. Participation was voluntary, responses were anonymous, and no personally identifiable information was collected.

Statistical analysis

IBM SPSS Statistics version 26.0 (IBM Corp., Armonk, NY, USA) was used for data analysis. Data characteristics and responses to the questionnaire were summarised using descriptive statistics. Frequencies and percentages were used to represent categorical variables and mean scores were used to represent Likert scale responses. Using a weighted scoring approach for the competency ranking question, education priorities were defined. The first class of competencies received 11 points while further down on the list they received fewer points, gradually to the lowest score, which was 1 point for the 11th ranked competency. A composite score was created for each competency, in which a higher score represents a higher level of education priority. Frequencies and percentages were calculated for answers to multiple item questions where more than one answer could be given as responses. Likert Scale questions were selected related to effectiveness of the current training programme, influence on training effectiveness and willingness of participants to undertake further medical education and training and mean scores of the questions assessed.[7, 20]

Results

Participant characteristics

The questionnaire was completed by a total of 115 general practitioner (GP) trainers, with 100% of them making their responses available for analysis. The information about the participants, including demographic and profession information (Table 1). There were 63 (54.8%) females and 52 (45.2%) males participating. The majority of participants were in junior or intermediate careers. Resident physicians accounted for 44.3% (n = 51) of participants, followed by attending physicians (38.3%, n = 44). Associate chief physicians accounted for 13.0% (n = 15) and other professional categories accounted for 4.3% (n = 5). No chief physicians took part in the survey.

There was a range of professional experience among participants. The largest proportion had worked for 5–10 years (35.7%, n = 41), followed by 16–20 years (20.9%, n = 24) and more than 20 years (18.3%, n = 21). Fifteen participants had less than 5 years of work experience (13.0%), while 14 participants had 11–15 years of work experience (12.2%). There was a general lack of experience in clinical teaching. The majority of respondents (66.1%, n = 76) were less than three years of teaching experience. Of the participants, a total of 17 (14.8%) had 3–5 years of teaching experience, 10 (8.7%) had 6–10 years, 7 (6.1%) had 11–20 years and 5 (4.3%) had more than 20 years of teaching experience. Most participants worked in a community health centre or township hospital (91.3%, n = 105), and 8.7% (n = 10) in county-level hospitals.

Table 1

Demographic and professional characteristics of general practitioner trainers, Sichuan Province, China (n = 115)

Characteristic	Category	n (%)
Gender		
	Female	63 (54.8)
	Male	52 (45.2)
Professional title		
	Resident physician	51 (44.3)
	Attending physician	44 (38.3)
	Associate chief physician	15 (13.0)
	Other	5 (4.3)
Work experience (years)		
	< 5	15 (13.0)
	5–10	41 (35.7)
	11–15	14 (12.2)
	16–20	24 (20.9)
	> 20	21 (18.3)
Clinical teaching experience (years)		
	< 3	76 (66.1)
	3–5	17 (14.8)
	6–10	10 (8.7)
	11–20	7 (6.1)
	> 20	5 (4.3)
Institution		
	County hospital	10 (8.7)
	Community health centre/township hospital	105 (91.3)

Continuing medical education priorities

The one most important continuing medical education need was identified (Table 2). Clinical thinking in general practice was selected as the top educational priority by 56.5% of participants (n = 65). A total of 21.7 percent (n = 25) chose common clinical skills, and 10.4 percent of the respondents (n = 12) chose

primary care practice ability. In response to communication skill or technique, 7.0% of responders (n = 8) chose it and in answering theoretical knowledge 4.3% of responders (n = 5) selected it.

A weighted scoring system was also used to rank the importance of 11 professional knowledge and competency areas. Clinical thinking received the highest weighted score (9.10), followed by theoretical knowledge (8.57) and doctor–patient communication (7.15). Chronic disease management (6.63) and clinical skills related to physical examination and diagnosis (6.41) ranked fourth and fifth, respectively. Emergency diagnosis and treatment (5.39), concepts and methods of preventive medicine (4.88), and primary care consultation methods (4.46) ranked sixth, seventh, and eighth, respectively. The lowest weighted scores were observed for standardised treatment of major chronic diseases (3.83), community drug use (3.08), and principles of two-way referral (1.67) (Table 2).

Table 2
Continuing medical education priorities and competency rankings among general practitioner trainers (n = 115) B. Weighted ranking of professional knowledge and competency domains

Clinical thinking	**9.10**	**1**
Theoretical knowledge	8.57	2
Doctor–patient communication	7.15	3
Chronic disease management (including risk assessment)	6.63	4
Clinical skills (physical examination and diagnosis)	6.41	5
Emergency diagnosis and treatment	5.39	6
Preventive medicine concepts and methods	4.88	7
Primary care consultation methods	4.46	8
Standardised treatment for major chronic diseases	3.83	9
Community drug usage	3.08	10
Two-way referral principles	1.67	11

Evaluation of the current training programme

The overall effectiveness of GP trainers at present in the provincial programme was assessments on the mean score of 3.99 on five point likert scale. Barriers to enhancing teacher effectiveness and perceptions of inadequacies of the existing training programme are summarised (Table 3).

The most frequently reported restriction of the current training programme (70.4% with (n = 81)) was insufficient training time. 34.8% (n = 40) reported limited opportunities to undertake active practical training and 26.1% (n = 30) reported the lack of standardisation of assessment and feedback. Twenty-one point seven percent of respondents (n = 25) used observation based teaching methods, which were

very much dependent on “watching and listening”. Only 15.7% (n = 18) reported content that reflected routine clinical practice, while 7.8% (n = 9) reported variability in teaching content. Ten participants (8.7%) selected other concerns.

Factors perceived as limiting the development of teaching competence were also assessed. Heavy clinical workload and insufficient time were the most frequently reported barriers (87.0%, *n* = 100), followed by the absence of effective incentives for teaching (67.8%, *n* = 78). Lack of access to high-quality training programmes was reported by 43.5% (*n* = 50) of participants. Lack of interest in teaching was reported by 9.6% (*n* = 11), while 5.2% (*n* = 6) considered their existing teaching competence sufficient. Four participants (3.5%) reported other barriers.

Table 3
Perceived training limitations and barriers to teaching competence among general practitioner trainers (n = 115)

A. Limitations of the current training programme	
Limitation	**n (%)**
Insufficient training time	81 (70.4)
Too few opportunities for active practice	40 (34.8)
Lack of standardised assessment and feedback systems	30 (26.1)
Single teaching method (mainly "watch and listen")	25 (21.7)
Content not matching clinical reality	18 (15.7)
Variable quality of teaching faculty	9 (7.8)
Other	10 (8.7)
B. Barriers to improving teaching competence	
Barrier	**n (%)**
Heavy clinical workload with insufficient time	100 (87.0)
Lack of incentive mechanisms	78 (67.8)
Lack of high-quality training programmes	50 (43.5)
Lack of interest in teaching	11 (9.6)
Believed current teaching ability was sufficient	6 (5.2)
Other	4 (3.5)

Preferences for teaching methods, training formats and assessment approaches

There were several preferences mentioned regarding information providing techniques, training and assessment styles presented (Table 4). Demonstration teaching (81.7%, *n* = 94) and case-based learning (79.1%, *n* = 91) were the most frequently selected teaching methods. Round-table experience sharing was selected by 57.4% (*n* = 66), theoretical lectures by 53.9% (*n* = 62), and workshops by 36.5% (*n* = 42).

The most common selected training format was visits to GP teaching bases (selected by 93.0% (n = 107)). 88.7% (n = 102) chose provincial short-term continuing 'medical education' courses. Very many learners chose to study online (44.3%, n = 51) or participate in tele-education lectures (40.9%, n = 47), but few took advantage of the possibility to visit other provinces or an overseas country (30.4%, n = 35).

Among the "assessment approaches," 80.0% (n = 92) of the participants selected problem-based learning assessment, and 79.1% (n = 91) selected direct observation of procedural skills. Problem-based learning assessment was the most frequently selected assessment approach (80.0%, *n* = 92), closely followed by Direct Observation of Procedural Skills (DOPS; 79.1%, *n* = 91). Objective Structured Clinical Examination (OSCE) was selected by 67.0% (*n* = 77), Mini-Clinical Evaluation Exercise (mini-CEX) by 58.3% (*n* = 67), and non-standardised examination by 30.4% (*n* = 35) (Table 4).

Table 4

Preferred teaching methods, training formats and assessment approaches among general practitioner trainers (n = 115)

A. Preferred teaching methods	
Teaching method	**n (%)**
Demonstration teaching	94 (81.7)
Case-based learning	91 (79.1)
Round-table experience sharing	66 (57.4)
Theoretical lectures	62 (53.9)
Workshops	42 (36.5)
B. Preferred training formats	
Training format	**n (%)**
Visits to GP teaching bases	107 (93.0)
Provincial short-term CME courses	102 (88.7)
Online self-study courses	51 (44.3)
Tele-education (lectures)	47 (40.9)
Cross-provincial/overseas study visits	35 (30.4)
C. Preferred assessment approaches	
Assessment approach	**n (%)**
Problem-based learning assessment	92 (80.0)
Direct observation of procedural skills	91 (79.1)
Objective structured clinical examination	77 (67.0)
Mini-clinical evaluation exercise	67 (58.3)
Non-standardised examination	35 (30.4)

Factors influencing training effectiveness

The factors that might affect the effectiveness of continuing medical education were evaluated by the participants on five point Likert scale. The mean scores of each of the factors was higher than 4.00, reflecting the general high degree of importance perceived as a means to enhance training effectiveness.

Teachers' demonstration and explanation skills (mean rating of 4.15) and having clear and unified training objectives and standards (mean rating of 4.10) were the highest rated factors. The answer for the opportunities for students to undertake practice and to be actively involved was 4.09 in the middle range. The other criteria were also rated positively and rated between 4.07 and 4.09 (Table 5).

Commitment to further education

Higher rate of willingness to take CME training events towards better teaching skills. In total, 87.8% (n = 101) agreed to be "will" or "very willing" to dedicate more time for future learning activities. The overall mean willingness score was 4.34 (on a five-point Likert scale). Of the participants, only one (0.9%) indicated he or she was not interested in taking part on future CME efforts.

Table 5
Training effectiveness factors and willingness to participate in continuing medical education (n = 115)

A. Factors influencing training effectiveness	
Factor	**Mean score**
Teachers' demonstration and explanation skills	4.15
Clear, unified training objectives and standards	4.10
Opportunities for student practice and active participation	4.09
Timely and constructive feedback from teachers	4.06
Objective and fair clinical skills assessment	4.05
Safe and supportive learning environment	4.04
Structured curriculum and training content	4.03
Diverse teaching methods (e.g. simulation, PBL)	4.03
B. Willingness to participate in continuing medical education	
Variable	**Result**
Mean willingness score (5-point scale)	4.34
Willing/very willing	101 (87.8%)
Unwilling	1 (0.9%)

Discussion

This study explored the Commissioning Continuing Professional Development needs, priorities and development needs of the PCP trainers in GP core teachers based in Sichuan province. The results suggest that GP trainers place emphasis on the educational components that enhance their clinical

reasoning and communication/teaching in their practice rather than specific knowledge of diseases. The general domain of clinical thinking in general practice was picked out by 56.5% of them as the most important training need and scored the highest about the degree of competency (9.10). Despite the relatively low percentage (4.3%) of first choice responses, theoretical knowledge ranked second in the weighted analysis (8.57), indicating that participants considered theoretical knowledge to be an essential stepping stone to clinical reasoning rather than a learning objective in and of itself. Doctor–Patient communication was also very high (weighted score 7.15) emphasizing interpersonal skill as well as clinical decision making for the doctor. Taken together, these study results indicate that GP trainers need learning programmes which combine knowledge and reasoning, and communication skills, with real-world primary care practice.

The clinical thinking is prioritised, indicating that GP trainers' roles are also changing within the Chinese primary healthcare system. Over 90% of those who participated were employed in the community health centre/clinics or township hospitals, and about two thirds had less than three years of clinical teaching experience. They reflect that on the one hand many trainers have frontline clinical duties and, on the other hand, little preparation as teachers. This means they need to balance complex patient management, teach learners and apply good clinical judgment when conducting typical appointments. This requires balancing complex patient management, supervision of learners, and clinical judgment during routine appointments.[21] General practice is unique from hospital-based specialties as the practitioners are often faced with undifferentiated symptoms, multimorbidity, preventive care and diagnostic uncertainty. Successful training involves making the right clinical decisions and explaining the reasoning behind those decisions; this is why trainers should adapt to the practical elements of training as well.[22, 23] The current study is exhibiting the clinical thinking domain as being very prominent, suggesting that participants were aware of the dual role and felt an urgent need to improve their capacity in modelling diagnostic thinking in their job environment when teaching.

The results are also similar to the general trend of GP education in China. Large scale survey of 3,580 health care professionals in 180 community health centres (CHCs) from 20 Chinese cities revealed significant regional levels of continuing medical education (CME) and showed important shortcomings of undergraduate exposure to general practice (GP). Many primary care physicians arrived to general practice via the transitional and job transfer route and had variable levels of educational training and teaching ability. The present results support those observations and confirm that GP training education needs are still focused on how to strengthen higher-order competencies and not just on adding more knowledge to clinicians who have proven suitable to train their colleagues as GP trainers indicate that there is need for faculty development to go beyond the mere acquisition of skills to the development of learning skills necessary to benefit future generations of General Practitioners.[24]

Similar findings from other Chinese studies also validate the differences in priorities for continuing medical education based on the role in which the physicians are working and different clinical environments. Self-sampling of 108 randomly selected GP's in Tibet revealed that the highest priorities for training were for the Management of cardiovascular disease (85.19%), respiratory disease (81.48%)

and digestive disease management (80.56%), which is indicative of the daily clinical demands presented to frontline practitioners in resource limited environment [7]. Even if there was a great deal of desire for more clinical knowledge, only 51.85% of respondents preferred bedside teaching. The emphasis that participants gave to clinical reasoning and communication and educational skills were significantly higher than the emphasis given to the disease-specific content in the present study. Practising clinicians' needs are mainly for getting up to date knowledge to better serve their patients; trainers need to have such knowledge but also need to be able to supervise their trainees, to teach them to reflect on their learning, and to explain, during clinical encounters, the processes leading to their decisions. Thus, the education programme for GP trainers needs to have a different focus from that of traditional CME programmes for practising doctors, focusing more on reasoning, supervision and education practice, rather than just on updating clinical knowledge.[25, 26]

The present results also corroborate increasing evidence that the continuing education needs vary markedly between professions in primary health care. Huang et al. (2026) conducted a survey of 508 rural GPs in 38 counties of Chongqing, and found that all 37 competencies differed markedly between the perceived training needs and what was available for education. The largest gap in education was found in clinical research and evidence-based practice with a mean difference of 1.60 (95% CI 1.49–1.72). Latent profile analyses also revealed three sub-groups of practitioners with low, moderate, and high educational needs (46.46%, 41.14%, and 12.40%, respectively) as training priorities were dependent on some characteristics of practitioners, such as professional title, family characteristics and career stage. The results show that there are spectrum and diversity in the primary care workforce in terms of educational needs. It helps to support this evidence that GP trainers in the present study form another subprofessional group, the educational priorities of which are largely centered on clinical reasoning and communication/teaching skills, rather than management of the disease alone.[9]

Competencies like community medication management and two-way referral are given a moderate importance and should also be taken into consideration. These skills were important to primary care skills but they were scored significantly lower than clinical reasoning, communication skills in the weighted analysis. These skills could have been seen by participants as more protocol-based or learned within their regular clinical roles, while clinical reasoning and communication are more generic skills that can be demonstrated in various clinical and learning scenarios.[27] This has been found that more senior practitioners have come to place greater importance on personal skills that they believe are applicable to other settings than on more narrowly targeted technical skills. Based on these findings, there is a need for faculty development programmes that involve the development of integrated professional skills and develop competencies rather than address only the procedural or administrative aspect.[9]

These findings are further elucidated by the systemic review carried out by Shuyu et al. (2024) indicated that cardiovascular disease (22.4%) accounted for the largest proportion of educational programmes, followed by surgery (10.4%), other specialties (8%), and emergency medicine (6.1%) and mental health (6.1%). Additionally, 69.3% of interventions were primarily lecture based note-taking and only 6.1% included skills based training and 4.0% involved problem or team based learning skills. Fewer studies

(85.7%) measured educational evaluation (immediate knowledge or skill acquisition) while fewer studies measured behavioural change (14.2%) or measures of organisational or patient outcomes (22.4%). The present study shows that this is not the only method used by GP trainers in their education. The need for reasoning, communication and authentic workplace competence were apparent throughout, indicating that further CME programmes in which the emphasis is shifted from knowledge transmission towards competency based faculty development, with elements of case discussion, workplace learning, reflective practice and longitudinal assessment. This is a more appropriate adjustment based on the needs identified by GP trainers, which will allow primary healthcare education in China to continue to transform in tandem with the changes in educational needs.[28]

The present study also highlighted a number of organisational obstacles that could prevent the continuing medical education (CME) to be effective for the GP trainers even if they are keen on participating. The largest number of respondents (87.0%) indicated that heavy clinical workload was the biggest obstacle, followed by inadequate incentive mechanisms (67.8%), lack of high quality training programmes (43.5%), lack of opportunities for active practice (34.8%) and limited assessment and feedback systems (26.1%). The fact that these findings are not only educational but also clearly linked to organisational/institutional issues that affect participating, motivating and holding on to faculty is highly beneficial for the field.

The effect has consistently been reported as that of workload on the Continuing Professional Development in Primary care settings in the Chinese context. In the survey of 286 healthcare workers from five community health service centres in three provinces, Yin et al. (2021) found that 29% of family doctors had high work pressure, and more than 30% had significant fatigue. Other health care workers had higher satisfaction with contracted arrangements than family doctors, which shows a trend of higher clinical demands being placed on family doctors. The current findings support these observations, as GP trainers are also subjected to comparable stresses in the workplace and an extra responsibility for education.[29]

The education preferences are backed up by Zhou et al. (2024) systematic review of studies conducted within China which were based on a sample of 35,545 village doctors across 38 studies. The need for clinical knowledge, practical clinical skills, diagnosis and treatment of common diseases was always the highest priority for education while, higher level hospitals were the hospitals of choice for training as they provide more clinical exposure and experienced supervisors. There was also consensus in favour of practical and cost-effective training in realistic clinical settings over a theoretical approach of teaching. [30]

The issue of access and place of education is also a concern. Almost half of the respondents indicated the lack of good training programmes, pointing to disparities in faculty development resources among regions. The results are similar to the national-level analysis carried out by You et al. (2025) utilising the large national-level analysis they conducted covering all continuing medical education programmes provided in general practice in China between 2016 and 2023. The majority of programmes were in

economically developed areas like Shanghai, Beijing and Zhejiang, while fewer programmes exist in the western part of China. In addition, although many programmes centred on patient care and medical knowledge (88% and 56.5% respectively), little considered interpersonal/communication skills (13%) and little was specific to GP trainers (5.6%). Overall, the findings indicate that traditional faculty development programs need to further reach nationals as well as extend the education content to include areas relevant to GP trainers.[5]

Overall, the results of the present study imply that faculty development is a much more complex affair than receiving periodic knowledge updates. GP trainers said that there is an integrated requirement for enhanced clinical thinking, communication, workplace teaching, structured evaluation and institutional support. These priorities align closely with the current national evidence of inequalities in the provision of continuing medical education across regions, limited faculty specific programmes and ongoing organizational issues that prevent participation in CME. Solving these problems will take a joint educational and organizational change instead of single changes in curriculum.[8]

Implications of practice and policy

This study has had a number of implications for the on-going medical education policy and faculty development in China. First, educational programs need to be more needs-based, reflecting the different roles and responsibilities of clinical educators instead of a fixed, uniform curriculum for practising doctors that GP trainers understand they don't play the same role. Higher-level focus needs to be given to clinical thinking, communication skills, supervision/identification of others in the workplace, teaching/learning competency, using a case-based learning and demonstration teaching and structured assessment at the workplace. Second, healthcare institutions must allocate protected teaching time and include teaching activities in career advancement and performance evaluations.[29] Secondly, create protected educational time and incorporate teaching activities in promotion and performance evaluations by healthcare institutions to minimize the burden of clinical workload on faculty development.[5] Third, the implementation of high-quality faculty development programs in the western region should be a national matter so as to further level educational resources. Lastly, the future standardization of continuing medical education courses should build on the current format, which is primarily focused on lectures, and incorporate competency-based educational methods, learn continuously in the doctors' role and feedback over the course of the year to achieve the dual objectives of clinical excellence and educational leadership among GP trainers, and reaching students with similar educational experiences at specific times throughout the year. These reforms would enhance primary healthcare education in China, its quality and sustainability, and move it closer towards the priorities of education identified in the present study.[30, 31]

Strengths and limitations

There are various strengths of this study. It is one of the few studies that specifically focused on the Continuing Medical Education (CME) requirements of GP trainers as opposed for practising GP. It has thus met the lack of studies concerning the training of continuing medical education needs of general

practitioners. Participants were drawn from a provincial GP core training programme, thus offering direct access into the world of practitioner clinicians in undergraduate and postgraduate medical education. The questionnaire covered various aspects of faculty development, such as the educational priorities, perceived barriers to the development, preferences for teaching and assessment methods, and provided a holistic view of the training needs.

There are also some constraints which was noted during this research. The study was of a cross sectional survey design in nature, thus only data obtained at a single point in time can be derived from the study, and change in the educational needs which is embedded in a future could not be determined. Second, the participants were selected from one provincial training programme in Sichuan, which could affect the generalisability of the results to other provinces or health care systems in other countries in which the unit is organised differently. Thirdly, the responses were self-reported answers, so may have been influenced by individual perception or the variability present in response bias. Last, the internal consistency of the instrument was satisfactory for the matrix scale, but there was some heterogeneity across questionnaire domains, requiring more development and validation of the instrument before future research.

Conclusion

This study demonstrated that GP trainers in Sichuan Province prioritised the development of clinical thinking, communication and practice-oriented competencies over theoretical knowledge alone. Heavy clinical workload, limited protected training time and insufficient institutional incentives were identified as the principal barriers to educational development, while interactive teaching methods, workplace-based learning and competency-focused assessment were consistently preferred. These findings indicate that future continuing medical education programmes should move beyond traditional lecture-based instruction towards learner-centred, competency-based faculty development supported by protected learning time, structured assessment and organisational recognition of educational activities. Strengthening these components may improve the educational capacity of GP trainers and contribute to the long-term development of high-quality primary healthcare education in China.

Declarations

Ethics approval and consent to participate

The study was approved by the Ethics Committee on Biomedical Research, West China Hospital of Sichuan University (approval no. 2021-155). The study was conducted in accordance with the Declaration of Helsinki. Before participation, all participants were informed of the purpose of the study, and electronic informed consent was obtained prior to completion of the questionnaire. Participation was voluntary, and no personally identifiable information was collected.

Consent for publication

Not applicable.

Availability of data and materials

The datasets generated and analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

MS contributed to questionnaire implementation, data collection and organisation, and drafting of the manuscript. HT contributed to survey design, data analysis, and revision of the manuscript. Both authors reviewed and approved the final manuscript.

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