Evaluation Study of an Outpatient Teaching Competence Enhancement Program for Supervising Physicians in General Practice Primary Care Training Bases Based on the CIPP Model: A Postprint

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Abstract

Background The outpatient teaching competence of supervising physicians at primary-level practice bases constitutes a crucial factor affecting the quality of standardized residency training for general practitioners. In recent years, community-based general practice teacher training programs have been initiated across multiple regions in China; however, no studies have employed comprehensive methodologies to evaluate program implementation. Objective This study aims to investigate the implementation status and hindering factors of the "Tiered Supervision Teaching Clinic" training program, thereby providing theoretical reference and strategic support for developing problem-oriented countermeasures. Methods Grounded in the CIPP model, this study utilized multiple research methods including content analysis, expert panel meetings, in-depth interviews, expert rating, and questionnaire surveys to systematically evaluate the implementation of the "Tiered Supervision Teaching Clinic" training program across four dimensions: context, input, process, and results. Results Policy document analysis and literature review revealed that community teacher training represents a medical talent cultivation initiative strongly supported by national health policies and has established extensive practical foundations domestically. The training system formulated by the Second Affiliated Hospital of Zhejiang University School of Medicine essentially encompasses the content and process standards for community general practice teacher training, whereas the assessment and incentive systems developed by primary-level practice bases lack implementation details. From May 2021 to January 2022, ten primary-level supervising physicians completed a total of 57 community teaching clinic sessions, with each physician participating in

4-7 sessions. The average outpatient teaching competence evaluation score increased from (78.6$±5.7)*pointsinthefirstroundto*(87.8±$4.5) points in the seventh round. Both primary-level supervising physicians and general practice residents reported satisfaction rates exceeding 90% for "teaching venue and equipment," "training format," "training content," and "training effectiveness," yet only 20% of primary-level supervising physicians expressed satisfaction with the "teaching incentive system." Respondents participating in the program training identified the primary hindering factors as "inadequate teaching-related incentive systems," "difficulties in recruiting patients for teaching clinics," and "insufficient applicability of training content." Conclusion The "Tiered Supervision Teaching Clinic" training program has achieved relatively favorable results in multiple aspects during its initial phase, yet considerable room for improvement remains. In the subsequent training phase, strategies must be formulated based on the actual conditions of primary-level practice bases to continuously enhance training quality.

Full Text

Preamble

Evaluation of the Improvement Programme on Ambulatory Training Ability of Community Preceptors in General Practice Using the CIPP Model

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Abstract

Background: The ambulatory teaching capacity of community preceptors is a critical factor affecting the quality of standardized training for general practice residents. In recent years, training programs for community general practice preceptors have been implemented across multiple regions in China, yet no studies have employed comprehensive methods to evaluate program implementation.

Objective: This study aims to investigate the implementation status and barriers of the "Graded-Supervised Ambulatory Training" program, providing theoretical reference and strategic support for developing problem-oriented countermeasures.

Methods: Based on the CIPP model, this study systematically evaluated the implementation of the "Graded-Supervised Ambulatory Training" program across four dimensions: context, input, process, and product, utilizing multiple research methods including content analysis, expert panels, in-depth interviews, expert rating, and questionnaire surveys.

Results: Analysis of policy documents and literature review indicated that community preceptor training is strongly supported by national health policies and has been widely practiced across China. The training system developed by The Second Affiliated Hospital of Zhejiang University School of Medicine basically covers the content and process specifications for community general practice preceptor training, while the assessment and incentive systems formulated by community practice bases lack detailed implementation rules. From May 2021 to January 2022, ten community preceptors completed 57 community teaching clinic sessions, with each participating 4–7 times. The average score for ambulatory teaching ability increased from (78.6$\pm$5.7)$in the first round to$(87.8$\pm$$4.5) in the seventh round. Satisfaction rates among both community preceptors and general practice residents exceeded 90% for "teaching venue and equipment," "training format," "training content," and "training effectiveness," yet only 20% of community preceptors expressed satisfaction with the "teaching incentive system." Interview respondents identified the main current barriers as "incomplete teaching-related incentive systems," "difficulties in recruiting patients for teaching clinics," and "insufficient applicability of training content."

Conclusion: The "Graded-Supervised Ambulatory Training" program achieved desirable results in multiple aspects during its initial stage, though considerable room for improvement remains. In the next training phase, strategies must be formulated based on the actual conditions of community practice bases to continuously improve training quality.

Keywords: Community general practice preceptors; Ambulatory teaching ability; CIPP model

Background

Training in community practice bases constitutes a vital component of standardized general practice residency training. Under the guidance of community preceptors, general practice residents develop clinical thinking and skills while becoming familiar with the fundamental models and content of primary care services. The ambulatory teaching capacity of community preceptors is a key factor ensuring that residents effectively enhance their general practice service competencies during community rotations. In July 2021, the Chinese Medical Doctor Association issued the "Standards for Teaching Clinics in Standardized Training of General Practice Residents" (hereinafter referred to as the "Teaching Clinic Standards"), which clarified that general practice teaching clinics represent an important method and core content of residency training, as well as a primary teaching responsibility for general practice preceptors [1]. Currently, an increasing number of primary care institutions in China have established general practice teaching clinics. In related research, Yu Zhijie et al. [2] and Gu Xiaoqing et al. [3] introduced practical models for community-based general practice teaching clinics, while Chen Liang et al. [4] examined the effectiveness of short-term training in community teaching clinics through assessment and evaluation methods. However, no studies have utilized established theoretical models to conduct comprehensive evaluations of the overall implementation of community teaching clinics. The barriers and coping strategies encountered during organization and implementation remain unclear, hindering the popularization and development of community teaching clinics.

Since May 2021, the General Practice Residency Training Base of The Second Affiliated Hospital of Zhejiang University School of Medicine (hereinafter referred to as "SAHZU") has launched the "Graded-Supervised Ambulatory Training" program in its community practice bases. This program aims to substantially improve community preceptors' ambulatory teaching abilities by guiding them in training general practice residents during teaching clinics, thereby providing technical support for community general practice faculty development. Based on the CIPP model, this study collected and analyzed relevant data from the "Graded-Supervised Ambulatory Training" program to systematically evaluate its implementation status, identify current barriers, and provide theoretical reference and strategic support for developing problem-oriented countermeasures.

Methods

Study Participants

Community Preceptors and General Practice Residents This study employed purposive sampling to select participants. Inclusion criteria were: (1) For community preceptors: having completed provincial-level or above general practice faculty training and obtained certification; having participated in SAHZU's "Graded-Supervised Ambulatory Training" program for at least three

months. (2) For general practice residents: residents from SAHZU' s general practice training base (cohorts 2018–2021); having completed at least one month of community teaching clinic training.

Exclusion criteria for both groups were identical: "refusal to participate or sign informed consent" and "heavy accent that might affect transcription of audio recordings." This study was approved by the Ethics Committee of The Second Affiliated Hospital of Zhejiang University School of Medicine [(2021) Ethics Review No. (0877)].

Policy Documents, Institutional Documents, and Electronic Literature Content analysis of policy documents, institutional documents, and electronic literature was conducted for context and input evaluation within the CIPP model. Inclusion criteria were: (1) Policy documents: from official websites of the Chinese Medical Doctor Association and the National Health Commission and its subordinate agencies; policy documents issued by these organizations regarding general practice faculty training since China' s establishment of the general practitioner system; content must involve primary care institutions. (2) Institutional documents: from SAHZU' s internal website, general practice training base electronic file collections, and community practice base internal documents; institutional documents regarding resident faculty training since the establishment of SAHZU' s general practice training base. (3) Electronic literature: literature published since January 1, 2011, addressing the status and needs of community general practice faculty training in China; sources including peer-reviewed academic journals, dissertations, and conference proceedings from provincial-level or above academic conferences.

Exclusion criteria were: (1) Policy documents: documents formulated by local medical associations or health administrative departments based on higher-level policy spirit. (2) Institutional documents: documents not formally implemented or already abolished by SAHZU' s general practice training base. (3) Electronic literature: errata, short comments, case reports, and similar documents.

Evaluation Methods

CIPP Model Evaluation Approach The CIPP model, proposed and systematically established by American scholar Daniel L. Stufflebeam in the 1960s–1970s, is an educational program evaluation model also known as the "improvement-oriented evaluation model." It upholds the core philosophy that "evaluation is not for proving but for improving," striving to comprehensively evaluate all aspects of educational training programs, identify problems in each 环节, and use timely feedback of effective information as a basis for program improvement to achieve sustainable quality enhancement [5].

The CIPP model comprises four integrated components: Context evaluation, Input evaluation, Process evaluation, and Product evaluation [5, 6]. Context evaluation involves value judgments about training objectives based on national

and social development needs and trainees' actual requirements. Input evaluation assesses the environment and resources needed and potentially available to achieve objectives, essentially evaluating training program feasibility. Process evaluation involves continuous verification, supervision, and feedback during program implementation, evaluating whether plans are executed and implemented effectively. Product evaluation assesses program outcomes, measuring, interpreting, and judging training achievements to confirm the degree to which trainees' needs are met.

Based on the CIPP model, this study employed content analysis, expert panels, in-depth interviews, expert rating, and questionnaire surveys to conduct phased evaluations of SAHZU' s "Graded-Supervised Ambulatory Training" program in community practice bases. Specific evaluation methods and content are presented in Table 1 .

Collection of Policy Documents, Institutional Documents, and Electronic Literature Relevant policy, institutional, and literature materials were collected through searches of official websites, hospital internal websites, general practice training base electronic file collections, documents provided by community practice base teaching administrators, and electronic literature databases.

Collection of Interview Data Interview outlines were drafted based on literature review results. After conducting pilot interviews with two general practice residents and two community preceptors, the outlines were revised and finalized through discussion and review by the teaching team. Ten community preceptors and seven 2019-cohort residents participating in teaching clinics were selected as interviewees using purposive sampling. Before interviews, the moderator explained the process and precautions, and respondents signed informed consent forms. Using semi-structured in-depth interview methods [7], interviewers asked about participants' experiences and perspectives regarding community teaching clinics. The entire interview process was recorded using a voice recorder (iFLYTEK-sr501), with interview duration controlled between 30–45 minutes.

Collection of Assessment and Evaluation Data Resident assessments included rotation completion assessments and annual assessments. (1) Rotation completion assessments were organized by community practice bases according to the "Standardized Training Content and Standards for Residents," comprising theoretical and skills assessments, with scores uploaded by the training base teaching secretary to the "Zhejiang Province Resident Standardized Training Information System Website." (2) Annual clinical practice ability assessments aligned with the "Zhejiang Province Resident Standardized Training Clinical Practice Ability Completion Assessment Requirements," using objective structured clinical examinations with five stations: patient interview (history taking,

physical examination), medical documentation, clinical thinking and decision-making, basic skills operation, and specialty skills operation. These were organized by the training base teaching management department, which also handled test development and score compilation.

Community preceptor evaluations used the "Patient Interview Assessment Form" from the "Resident Standardized Training Evaluation Indicators (General Practice)," with general practice clinical base preceptors serving as supervisory experts to observe and evaluate the entire process of community preceptors guiding residents during outpatient interviews. Evaluation results were compiled by community practice base teaching secretaries and fed back to the general practice clinical base for analysis and discussion at teaching team meetings.

Additionally, in late January 2022, the teaching team used a self-developed questionnaire to invite general practice residents and community preceptors to evaluate satisfaction with the training program' s teaching venues and facilities, preceptors' teaching abilities, teaching systems and implementation, teaching incentive systems, and training format, content, and effectiveness.

Data Processing and Analysis Two researchers independently screened policy documents, institutional documents, and electronic literature according to inclusion criteria, with a third researcher adjudicating discrepancies. Core information from included materials was extracted using a self-developed form, including title, issuing institution, publication date, and main content. One researcher analyzed the materials using content analysis, with results presented descriptively [8]. Interview data were analyzed by two researchers using Colaizzi' s seven-step method, continuously refining themes through constant comparison [9, 10]. Qualitative data analysis was completed using MAXQDA 2020 software. Resident assessment results were analyzed using descriptive analysis, with measurement data expressed as (mean±standard deviation) and count data as absolute values (percentages). Statistical analysis was performed using EXCEL 2016 software.

Results

Context Evaluation

Training Needs Assessment High-quality general practice faculty is essential for cultivating high-quality general practitioners and promoting general practice development [11-12]. The 2012 "Implementation Opinions on General Practice Faculty Training (Trial)" jointly issued by the former Ministry of Health, Ministry of Education, and Ministry of Finance explicitly stated that "improving general practice faculty training capacity and level ensures general practitioner training quality." The 2018 "Opinions on Reforming and Improving General Practitioner Training and Incentive Mechanisms" also emphasized the importance of general practice faculty training, proposing to "develop general

practice faculty training standards" and "incorporate teaching performance into performance assessments, with teaching experience and quality as important factors for professional promotion."

Training in community practice bases represents a critical link for general practice residents to transition from theory to practice and transform theoretical knowledge into practical work capabilities. The general practice outpatient clinic is the primary workplace for general practitioners, and developing residents' competency in general practice outpatient settings is the core content of standardized training. Since the "Standardized Training Content and Standards for Residents (2019 Edition)," the rotation period for general practice residents in community practice bases has been extended to seven months, emphasizing outpatient-based training and highlighting the importance of community-based practical teaching, particularly community general practice outpatient teaching, in general practitioner cultivation. Table 2 presents information on representative policy documents.

As the main providers of community general practice outpatient teaching, community preceptors' ambulatory teaching capacity is key to ensuring teaching quality. Currently, community preceptors commonly exhibit issues such as "insufficient teaching awareness, unfamiliarity with teaching methods, and lack of understanding of teaching evaluation," and their deficient teaching capacity affects teaching quality in community practice bases [13]. Therefore, actively developing community preceptors' ambulatory teaching capacity and promoting community general practice faculty development plays a decisive role in improving general practice resident training quality.

Previous surveys indicate that community preceptors generally recognize the important role of general practice outpatient teaching in resident training, consider their own insufficient clinical diagnosis and treatment capacity and teaching ability as major factors affecting teaching effectiveness, and hope to receive training that helps improve ambulatory teaching capacity [13-15]. Additionally, community preceptors believe that training methods involving repeated practice with targeted feedback are more effective for improving teaching capacity than traditional lecture-based training [16-17].

Since 2016, when SAHZU' s general practice training base signed contracts with two community practice bases, the hospital has regularly dispatched general practice faculty to guide teaching work in community bases, including conducting teaching clinics. Previous guidance revealed that although most community preceptors had undergone standardized general practice faculty training, they still commonly exhibited issues of "insufficient teaching awareness, unfamiliarity with teaching methods, and lack of understanding of teaching evaluation" in practice, urgently requiring targeted practical training.

Training Objective Establishment and Evaluation Since May 2021, SAHZU has implemented the "Graded-Supervised Ambulatory Training"

program in two community practice bases: Xiaoying Street Community Health Service Center and Nanxing Street Community Health Service Center. The program aims to improve community preceptors' ambulatory teaching capacity, promote community general practice faculty development, and enhance general practice residency training quality.

The training objective was established based on the need to develop community preceptors' ambulatory teaching capacity and strengthen community general practice faculty development. Through individualized, targeted training involving one-on-one guidance, repeated practice, and rapid feedback, the program aims to achieve improved ambulatory teaching capacity among community preceptors.

Input Evaluation

Teaching Clinic System Development SAHZU' s training base and general practice specialty base have always adhered to the philosophy of "resident-centered, competency-oriented" training, developing a series of teaching clinic-related systems including the "Resident Standardized Training Performance Management System,""Resident Standardized Training Reward and Punishment System," "Clinical Teaching Quality Assessment and Evaluation System," "General Practice Training Base Resident Management System," and "General Practice Training Base Faculty Management System."The two bases separately developed the "Preceptor Assessment and Incentive System"as the basis for managing, assessing, and rewarding residents, community preceptors, and specialty base supervisory experts. Table 3 presents information on representative training system documents.

Analysis of institutional documents revealed that the training base and specialty base systems cover management, evaluation, and rewards for clinical bases, base preceptors, and general practice residents. However, the assessment and incentive systems developed by community practice bases failed to effectively connect with specialty base systems, lacked detailed implementation rules, and did not specify concrete implementation plans for excellence evaluation, performance demonstration, or priority promotion.

According to relevant requirements in the "Teaching Clinic Standards,"the teaching team developed the "SAHZU General Practice Teaching Clinic Informed Consent Form" and "Graded-Supervised Ambulatory Training Flow Chart" (Figure 1 [Figure 1: see original paper]), and used the "Patient Interview Assessment Form" from the Chinese Medical Doctor Association' s "Resident Standardized Training Evaluation Indicators (General Practice)" as the scoring standard for supervisory experts.

Funding Support With strong support from the general practice specialty base and full cooperation from the two community health service centers, hardware construction for community teaching clinics has been completed. Program

operating funds primarily cover preceptor performance and incentives, jointly borne by the general practice clinical base and community practice bases, with key institutional safeguards provided by the "General Practice Training Base Faculty Management System"and "Preceptor Assessment and Incentive System."

General Practice Clinical Base Profile and Supervisory Expert Selection SAHZU' s general practice training base is among the first batch of general practice standardized training bases in Zhejiang Province, the first batch of general practice residency training bases designated by the former Ministry of Health, and the first batch of national key general practice training bases. The base operates independent general practice outpatient clinics and wards, with over 70,000 outpatient visits and more than 1,600 discharges in 2021. The base has 26 general practice physicians, including eight provincial-level or above general practice faculty, and 52 general practice residents and seven transitioning physicians in training. The base' s resident completion exam pass rate has reached 100% for three consecutive years, with first-time physician licensure exam pass rates of 75% in 2020 and 92.3% in 2021.

This training program selected eight general practice faculty members from the specialty base as supervisory experts (five associate chief physicians and three senior attending physicians), requiring completion of national or provincial general practice faculty training with certification, at least three years of general practice residency teaching experience, and extensive general practice outpatient teaching experience.

Community Practice Base Teaching Clinic Hardware Construction and Preceptor Selection The specialty base signed contracts with Xiaoying and Nanxing Community Health Service Centers as community practice bases in 2016. Both bases meet the construction standards for general practice community practice bases in the "Resident Standardized Training Base Standards" and strictly follow "Teaching Clinic Standards" requirements to establish "General Practice Teaching Clinics."

The training program selected five community preceptors from each base (totaling ten), including eight females (80%) with an average age of $42.7\$\pm4.4 years (range: 37–51 years). Six (60\pm\$5.2$ years.

Process Evaluation

Training Completion Status Both the general practice specialty base and community practice bases appointed teaching secretaries who developed detailed teaching clinic schedules for supervisory experts, community preceptors, and residents to ensure smooth program implementation. From May 2021 to January 2022 (nine months), eight specialty base supervisory experts, ten community preceptors, and 27 residents participated in the program, completing 57 "Graded-Supervised Ambulatory Training" sessions. Each community preceptor participated 4–7 times. The program primarily involved seven 2019-cohort

general practice residents, each participating 4–8 times. Three 2018-cohort residents also participated 1–2 times each before their completion exams, while the remaining 17 residents from the 2020 and 2021 cohorts each participated 1–2 times.

Implementation Process and Barriers Semi-structured in-depth interviews with general practice residents and community preceptors revealed both recognized strengths and implementation barriers of the "Graded-Supervised Ambulatory Training" program. Regarding strengths, respondents consistently acknowledged that community practice bases had established dedicated teaching clinic rooms with complete hardware facilities meeting daily teaching needs. Some respondents mentioned that community practice bases appointed part-time teaching secretaries responsible for scheduling, form preparation, and organization, ensuring smooth program implementation procedurally. Additionally, respondents recognized the high enthusiasm and participation of both community preceptors and general practice residents, and affirmed the active role of supervisory experts in teaching clinics.

Conversely, respondents identified three main implementation barriers. First, **incomplete teaching incentive systems**: The "Preceptor Assessment and Incentive Systems" developed by the two community practice bases were simplistic and rough, with insufficiently detailed incentive measures, merely stating "linked to promotion, priority in excellence evaluation" without specific assessment methods or standards, neglecting teaching quality evaluation. Second, **difficulties in recruiting patients for teaching clinics**: Community teaching clinic patients showed low participation enthusiasm, with few "high-quality" patients having sufficient time and typical medical histories to meet teaching clinic needs. Third, **insufficient applicability of training content**: Some community preceptors reported that general practice specialty base instructors were unfamiliar with community healthcare work, lacked advance understanding of patients' conditions and family backgrounds, and provided insufficiently targeted guidance on social factors, patient compliance, and health education. Table 4 presents interview findings with representative quotations.

Product Evaluation

Improved Ambulatory Teaching Capacity Among Community Preceptors Following community teaching clinics, supervisory experts evaluated and provided feedback on community preceptors' ambulatory teaching capacity according to the "Patient Interview Assessment Form" criteria. Scoring results showed an overall upward trend as faculty training progressed, with average scores increasing from $(78.6\$\pm5.7)in the first round to(87.8\pm\$4.5)$ in the seventh round, representing an 11.7% average increase. Table 5 presents overall results across seven rounds.

Assessment Results of General Practice Residents The program primarily involved seven 2019-cohort general practice residents, with residents from other cohorts participating less frequently. This study analyzed only the seven residents' assessment results. All residents scored 90 or above on clinical thinking assessments. All passed the annual assessment in December 2021, achieving passing scores on outpatient interview-related skills including history taking, physical examination, clinical thinking, and initial progress note writing. Table 6 presents residents' basic characteristics and assessment results.

Program Satisfaction Evaluation Both general practice residents and community preceptors expressed good overall satisfaction with the training program. Satisfaction rates (proportion indicating "satisfied"or "very satisfied") for "teaching venue and facilities," "training format," "training content," and "training effectiveness" were 97.3% (36/37), 94.6% (35/37), 94.6% (35/37), and 91.9% (34/37), respectively. Regarding community preceptors' "teaching capacity" and "teaching system implementation," 81.48% (22/27) and 92.6% (25/27) of residents expressed satisfaction, respectively. However, only 20.0% (2/10) of community preceptors were satisfied with the "teaching incentive system," and 40.0% (4/10) expressed dissatisfaction with "system development and implementation."

Discussion

Analysis of Program Implementation Status

This study evaluated the phased implementation of SAHZU' s "Graded-Supervised Ambulatory Training" program across four CIPP model dimensions: context, input, process, and product.

Policy document analysis revealed that strengthening general practice faculty development is essential for cultivating high-quality general practitioners and promoting general practice development. As actual implementers of community-based practical training, community preceptors' capacity development has gradually gained attention from Chinese general practice researchers, with increasing publications on training concepts, models, and effectiveness over the past decade. Meanwhile, numerous studies have identified widespread shortcomings in community preceptors' teaching enthusiasm and capacity, affecting teaching quality in community practice bases [18]. To accelerate community practice base faculty development, this study initiated the "Graded-Supervised Ambulatory Training" program, standardized teaching clinics in two community practice bases, selected ten community preceptors for training, and developed community teaching clinic operational standards and evaluation criteria based on Chinese Medical Doctor Association and SAHZU teaching department policies and training systems, providing necessary safeguards for smooth program implementation.

Unlike short-term lecture-based faculty training workshops [19], the "Graded-Supervised Ambulatory Training" program emphasizes the central role of practice in developing community preceptors' ambulatory teaching capacity. Through continuous on-site evaluation and immediate feedback from supervisory experts in community teaching clinics, community preceptors can achieve more intuitive improvements in ambulatory teaching competence through teaching practice, thereby gaining community practice base support. Process evaluation results showed that during the nine-month training period, ten community preceptors completed 57 community teaching clinic sessions. In-depth interviews with community preceptors and resident representatives revealed that most respondents identified strengths including "complete hardware facilities," "reasonable organizational arrangements," and "high training participation," indicating that community practice bases and stakeholders attached considerable importance to program implementation, with the training program operating on track.

Conversely, interview results indicated three implementation barriers: "incomplete teaching-related incentive systems," "difficulties in recruiting patients for teaching clinics," and "disconnected training content." First, community preceptors'enthusiasm for participating in teaching clinics could be improved. Optimizing incentive systems could encourage more focused preparation before teaching clinics. Second, difficulties in patient recruitment relate both to objective factors like low patient cooperation and insufficient publicity about teaching clinics by community healthcare institutions. Some community residents showed low participation enthusiasm due to unfamiliarity with teaching clinic processes and benefits. Third, teaching improvement suggestions from general practice clinical base instructors had limited applicability, possibly because supervisory experts lacked community healthcare practice experience and did not communicate thoroughly with community preceptors before participating in community teaching clinic activities.

Discussion of Product Evaluation

This study documented seven rounds of ambulatory teaching capacity assessment results for community preceptors during the training period, showing a gradual upward trend in total evaluation scores, consistent with domestic community preceptor training outcomes. For example, Nanjing Medical University Affiliated Jiangning Hospital conducted training including community teaching clinics for 60 general practice faculty members (including 25 community preceptors) from clinical teaching bases and five community practice bases, showing significant improvements in theoretical exams, basic skills tests, and teaching ward rounds after training ($P<0.01$) [20]. Since most community preceptors have adapted to the program' s evaluation standards, the next training phase should appropriately raise assessment requirements for ambulatory teaching capacity to encourage more thorough teaching preparation.

This study collected rotation completion and annual assessment results for seven

2019-cohort general practice residents, showing that all seven passed both assessments and demonstrated qualified community outpatient interview competencies. Previous research indicates that training community preceptors' teaching capacity helps improve residents' clinical abilities. For example, Shanghai Fenglin Street Community Health Service Center conducted systematic three-phase training (theoretical courses, teaching drills, and teaching practice) for 16 community preceptors, with residents taught during the later training stage showing significant improvements in general practice theoretical knowledge, physical examination, and clinical operation skills [21]. Current outpatient interview competencies emphasize disease diagnosis. Given the importance of chronic disease management in community general practitioners' daily work, the next training phase should consider strengthening residents' chronic disease management capacity in outpatient settings.

In addition to assessments, this study surveyed satisfaction among community preceptors and residents. Satisfaction results indicated recognition of training format, content, effectiveness, and facilities, yet only 20% of community preceptors expressed satisfaction with teaching incentive policies, suggesting that incentive systems may not have achieved their intended effect. Satisfaction rates in this study were higher than those for short-term lecture-based faculty training workshops. For example, a 2008 satisfaction survey of 136 general practice faculty (including 53 community preceptors) who participated in short-term training at Chongqing General Medical Education Center showed an overall satisfaction rate of 58.8%, with only 30.9% of respondents believing they could master training content [19]. Satisfaction differences may relate to different training models, but since this study included relatively few participants and could not exclude influences from interpersonal relationships, results should be interpreted cautiously.

Strategies for Continuous Quality Improvement

Continuously Optimize Community Preceptor Incentive Systems Establishing detailed and reasonable teaching capacity assessment and incentive systems is crucial for promoting community faculty development. System development should fully incorporate stakeholder opinions and encompass community preceptor admission standards, assessment criteria, excellence evaluation standards, teaching allowance distribution standards, professional promotion, and external training quotas, thereby effectively motivating community preceptors to complete teaching tasks with quality and quantity within community healthcare institutions' capabilities. Clinical specialty bases should also strengthen community preceptor development and incentives by recruiting them for regular faculty training activities including clinical knowledge and skills, teaching capacity, and research ability enhancement training; providing external training opportunities with covered expenses; prioritizing outstanding community preceptors in base-level excellent teacher selection; and focusing on developing "seed" community preceptors.

Expand Recruitment Channels to Identify Suitable Teaching Patients To address difficulties in recruiting patients for community teaching clinics, community preceptors should actively broaden recruitment channels, identify typical patients suitable for teaching during daily practice, and appropriately guide them to schedule teaching clinic appointments. In community teaching clinics, community preceptors should emphasize health management concepts and methods, guiding residents in comprehensive risk assessment and appropriate health education to enhance patients' sense of healthcare gain and satisfaction. Simultaneously, community healthcare institutions should strengthen publicity about teaching clinics among community residents, combining activities like elderly health examinations and community health fairs to raise teaching clinic awareness and attract active appointments. Through in-depth patient assessment and health management, community healthcare institutions can leverage the continuity characteristic of general practice to improve community health service quality.

Conduct Teaching Skills Training Addressing Community Healthcare Needs Teaching skills training for community preceptors should be based on actual community healthcare needs and teaching scenarios, aiming to improve teaching capacity through targeted training. For example, practical teaching skills needed in daily teaching work such as the "one-minute preceptor" and "sandwich feedback" methods should be included. Repeated training in practical teaching skills can help community preceptors quickly master and apply these skills in actual teaching work, thereby improving outpatient teaching effectiveness for general practice residents. Regarding the issue of inapplicable teaching improvement suggestions, community preceptors could be encouraged to proactively contact supervisory experts before teaching clinic activities to share patient history information and problems needing resolution, allowing experts to pre-assess suitable teaching methods and precautions, thereby enhancing training content applicability.

Strengths and Limitations

This study' s strength lies in using the CIPP model to systematically evaluate the implementation of SAHZU' s "Graded-Supervised Ambulatory Training" program, employing multiple research methods to collect qualitative and quantitative data, providing comprehensive perspectives for general practice training base managers. The evaluation activity was integrated throughout the entire training process, fully demonstrating the formative function of evaluation and organically combining multiple methods to identify program deficiencies, facilitating problem-oriented quality improvement measures. However, the CIPP model has inherent applicability limitations. Since this training program was implemented for a relatively short period with limited numbers of participating residents and community preceptors, and evaluation indicator selection was not sufficiently objective and comprehensive, results require cautious analysis combined with training realities, and the research scope should be expanded to

enhance result generalizability.

Conclusion

To achieve sustainable development of community general practice faculty development, this study comprehensively evaluated the implementation of the "Graded-Supervised Ambulatory Training" program based on the CIPP model. Community general practice faculty training enjoys favorable policy and practice support. SAHZU' s general practice residency training base developed corresponding guidance standards and safeguard systems. After initial nine-month implementation, the training program achieved desirable feedback regarding improved community preceptors' ambulatory teaching capacity, residents' clinical competencies, and program satisfaction. However, considerable improvement potential remains in refining teaching-related incentive systems, intensifying patient recruitment efforts for teaching clinics, and teaching instructional methods to community preceptors. The next training phase should formulate strategies based on community practice bases' actual conditions to continuously improve training quality.

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Author Contributions

Wu Lingyan was responsible for conceptualization and design, literature and data collection and organization, and manuscript writing and revision. Xu Zhijie contributed to conceptualization and design and manuscript writing and revision. Li Bohan and Sun Xue handled literature and data collection and organization. Song Zhenya, Tong Yuling, Guo Yi, Mao Lingna, and Yu Yingying were responsible for quality control and manuscript review. Song Zhenya provided overall supervision and management.

The authors declare no conflicts of interest.

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Tables and Figures

Table 1 Content and methods of program evaluation based on CIPP model

Table 2 Basic information of representative policy documents

Table 3 Basic information of representative documents of training system

Table 4 Findings of interviews among partial stakeholders

Table 5 Evaluation scores of community preceptors' abilities of ambulatory training

Table 6 Assessment results of third-grade GP residents in 2021

Figure 1 Flow chart of "Graded-Supervised Ambulatory Training" [Figure 1: see original paper]

Note: Figure translations are in progress. See original paper for figures.