The Work Competence of General Practitioners Working in Shanghai's Community Health Services: A Cross-Sectional Study based on Self-assessment

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Abstract

Background: The aim of the study was to investigate the work competence of GPs in community health services(CHS) in Shanghai, China.

Methods: A questionnaire was designed on the basis of a previous capacity evaluation indicator system. We adopted a stratified and proportional cluster sampling method in this self-assessment and cross-sectional study. We collected data on GPs demographic variables and work competence which was separated as patient care ability, teaching ability, communication skill and coordination ability, using the questionnaire.

Results: A total of 2954 GPs were sampled from 116 CHS in Shanghai. The median score of patient care ability, teaching ability, communication skill and coordination ability were 80[70-88.75], 76[60-80] and 80[70-85] on a scale of 100, respectively. GPs who were 30-39 years old, worked in urban CHS, and participated in GP trainer's training or had teaching experience got higher scores in patient care ability. GPs who worked for 5-20 years in CHS, worked in training CHSs and participated in GP trainer's training program had higher scores in teaching ability. As for communication skill and coordination ability, GPs who were older than 30-39 years old and with a senior professional title, worked in training CHS, participated in GP trainer's training and had teaching experiences in CHS got higher scores.

Conclusions: The work competence of GPs in Shanghai's CHS largely meets the requirements of daily practice, but there is still great improving space in the aspect of teaching ability.

1. Introduction

GPs play a crucial role in a new medical model[1]recently introduced in China. Apart from providing medical care, GPs have taken new challenges as requested in the model including team organization management, communication and teaching in their daily work[2]Some well-known models abroad, such as the WONCA Tree model[3], the 13 competency model put forward by the Membership of the Royal College of General Practitioners(MRCGP) in England[4], and the ACGME Program Requirements for Graduate Medical Education in Family Medicine in the United States[5], do not simply emphasize medical care, and they also underline the non-clinical aspects such as management, leading power, and referral or cooperation with specialists[6][7]. Nevertheless, due to the lack of an acknowledged model, it is still unknown how is the work competence of China's GPs. Some scholars designed questionnaires through Delphi expert consultation and literature review, and carried out in empirical studies[8-11].The indexes in these study obtained good reliability and validity, however, some limitations including small and convenience samples, incomplete contents or less representative objects was the barriers in the way of generalization. To assess the work competence of GPs in community health services(CHS) in Shanghai, China, we conducted a cross-sectional study using a self-designed questionnaire.

2. Materials And Methods

2.1 Study Design

We adopted a stratified and proportional cluster sampling method in the cross-sectional study during Jan,2017to Feb,2017 in CHSs in Shanghai, China.

2.2 Study population and sample

There were 16 districts, 245 CHSs and 5000 GPs in Shanghai in 2016[12]. 75 CHSs were in seven urban districts and 170 in nine rural districts. Sampling was stratified according to location and whether it was a training CHS (training CHS means the one was qualified to afford the teaching affairs of GP standardized training by Shanghai Health and Family Planning Commission. Until December 2016,a total of 57 CHS was qualified as training CHS).We included all the training CHSs, and non-training CHSs were sampled in a ratio of 1 to 1 with the training ones, in order to get enough eligible responses for teaching ability survey. Because the number of training CHS in each districts was different, the number of non-training CHS needed in each district(N) was calculated as the follow formula:

$$N = \frac{\text{The number of non-training CHS in each district}}{\text{The number of non-training CHS in Shanghai}} \times \text{The total number of non-training CHS needed.}$$

All GPs working in these sampled CHS were invited to complete the questionnaire.

2.3 Design of questionnaire

The questionnaire was designed on the basis of an indicator system to evaluate primary capacities of GP trainers constructed by Zhang Yuan et al.[13], which was conducted through two rounds of Delphi expert consultation among 28 related experts. We classified GP's work competence as follow: patient care ability, teaching ability and communication skill and coordination ability. The questionnaire consisted 4 sectors:

(1)demographic variables including gender, age, educational status, professional title, accepted GP standardized training(Yes/No), working in a training CHS(Yes/No), CHS location, participated in GP trainer's training(Yes/No), and teaching experiences(Yes/No).

(2)patient care ability, containing 16 indexes, separated as 3 secondary items—basic public healthcare, diagnosis and treatment of community common diseases and community clinical skills.

(3)teaching ability mainly asking teaching knowledge and skills, containing 10 indexes.

(4)communication skill and coordination ability, containing 4 indexes.

For each index, we used 5-point Likert scale ranging from1 to 5, as worse ,poor, fair, good and excellent.

2.4 Data collection

Administrator in each CHS was responsible for issuing and collecting questionnaires. All GPs were encouraged to complete all the questions according to themselves. Ineligible ones(contradictory or answered less than 50%)were deleted. All scores were converted into percentage system.

2.5 Statistical analysis

First, we conducted the reliability analysis using Cronbach's coefficient alpha and validity analysis by KMO test. We converted two demographic variables, age and work duration, into categorical data and presented as frequencies and percentage. Age(years old) was divided into 4 parts, <30, 30~39, 40~49, and ≥ 50 . And work duration(year) was divided into 4 parts, <5, 5~9, 10~19, ≥ 20 . Continuous data were reported as mean $\pm$ SD(standard deviation) if it was on the Gaussian distribution, and median[IQR(interquartile range)], if not. Univariate analyses were performed using Mann-Whitney U test and Kolmogorov-Smirnov test. Significant univariate factors were then analyzed by generalized liner model for multivariate analyses. Data was analyzed by SPSS Statistics software, version25.0(SPSS Inc. Chicago).P values <0.05 in two-side were considered statistically significant.

3. Results

The reliability(Cronbach α) and validity(KMO) of the questionnaire was 0.826 and 0.944.

3.1 Study population

The distribution and flowchart of the sampled CHS and GPs was shown in Figure 1. 116 CHSs was sampled. A total of 2594 GPs were sent questionnaires, and 2592 eligible pieces returned, where the response rate was 99.9%. The demographic data of the 2592 GPs was presented in Table 1. More females(1526, 58.9%) participated in the study than males(746, 28.8%). Nearly 50% of the subjects was 30-39 years old. 1956(75.5%) worked in urban CHS, and 1562(60.3%) received GP trainer's training. In addition, less than half(1138, 43.9%) had teaching experiences in CHS.

Table1

Demographic variables of all the 2592 GPs

Variables	N(%)
Num. of CHS	116(100.0)
Num. of GP	2592(100.0)
Gender	
male	746(28.8)
female	1526(58.9)
missing	320(12.3)
Age(y)	
<30	186(7.2)
30-39	1276(49.2)
40-49	793(30.6)
≥50	286(11.0)
missing	51(2.0)
Educational status	
technical secondary school	32(1.2)
college	265(10.2)
university	2052(79.2)
postgraduate and above	241(9.3)
missing	2(0.1)
Professional title	
primary	420(16.2)
intermediate	1848(71.3)
senior	190(7.3)
missing	134(5.2)
Work duration(y)	
<5	458(17.7)
5-9	605(23.3)
10-19	934(36.0)
≥20	583(22.5)
missing	12(0.5)

received GP standardized training	
yes	1384(53.4)
no	1204(46.5)
missing	4(0.2)
working in training CHS	
yes	1296(50.0)
no	1296(50.0)
CHS location	
urban area	1956(75.5)
rural area	628(24.2)
missing	8(0.3)
received GP trainer's training	
yes	1562(60.3)
no	1018(39.3)
missing	12(0.5)
teaching experience in CHS	
yes	1138(43.9)
no	1417(54.7)
missing	37(1.4)

3.2 Score of GPs' 3 kinds of ability

The median score of patient care ability for GPs was 80[70-88.75]. The index “up on the chronic management approaches”, “getting the latest guidelines” and “placing nasogastric tube or catheter” had the lowest score in each of the 3 secondary items(Basic public healthcare, Diagnosis and treatment of community common diseases and Community clinical skills)(Figure2). The assessment of GPs' teaching ability was done within those with teaching experience(n=1138). Median score in this sector was 76[60-80]. Only 75.1% GPs were willing to spend time in teaching. The index “interests in teaching” got the lowest score, 3.46 ± 0.800 . The index “applying of various teaching methods” was only 3.78 ± 0.720 (Figure 3). Mean score of communication skill and coordination ability was 80[70-85]. The index “organization and management ability” had the lowest score, 3.52 ± 0.774 .(Figure 4)

3.3 Association between demographic variables and GP's 3 kinds of abilities

GPs who were 30 to 39 years old[OR=5.353(1.499~9.207), P=0.006], worked in urban CHS[OR=2.469(0.351~4.586),P=0.022], participated in GP trainer's training[OR=2.761(0.731~4.808), P=0.008], or had teaching experiences[OR=3.648(1.616~5.680), P<0.001] got a higher score in the patient care ability. And GPs with GP standardized training got a lower score[OR=-3.004(-4.890~-1.118), P=0.002].As for teaching ability, GPs who worked for 5 to 19 years[OR=7.14(2.468~11.812), P=0.003 and OR=5.316(1.302~9.331), P=0.009],worked in a training CHS[OR=13.226(9.880~16.572), P<0.001], or participated in GP trainer's training[OR=17.757(13.800~21.714), P<0.001] got a higher score. GPs who were 30-39 years old[OR=-2.224(-4.264~-0.184), P=0.033], worked in training CHS[OR=1.148(0.066~2.229),P=0.038], participated in GP trainer's training[OR=1.484(0.297~2.671),P=0.014], or had teaching experiences in CHS[OR=5.174(3.995~6.354),P<0.001] got a higher score. GPs with primary professional title or GP standardized training got a lower score[OR=-3.578(-6.229~-0.928), P=0.008; and OR=-1.858(-2.951~-0.766), P=0.001].(Table2)

4. Discussion

4.1 Summary

The study ,in a self-assessment method, suggested that a large space exists in improving the patient care ability, teaching ability, communication skill and coordination ability of GPs in Shanghai's CHSs, especially the teaching ability.

4.2 Strengthens and limitations

The study had several strengths. Firstly, this study had the largest sample of 2592 GPs, more than half of the total in Shanghai, among the published analogous studies in China. Accompanied with the scientific sampling and high response rate, the data was complete and representative. Secondly, though the questionnaire we used was self-designed, we referred to authoritative ones. The questionnaire had good reliability and validity, with complete content and suitable structure, thus, the results and conclusions should be reliable.

There were also some limitations. The major one was that measurement and recall bias were investible, because the data we used were collected through GPs' self-assessment. Some more objective ways should be adapted in future's updated assessment. In addition, the conclusion may not be always right outside Shanghai. It was recognized that GP developed better in Shanghai, where the number of GP per 10 thousand people[14]was far more than that of most other regions in China, especially the western China.

4.3 Comparison with existing literature

4.3.1 Patient care ability

GPs' median score of patient care ability was 80[70-88.75]. It was proved that such ability level could meet the daily working requirement[15]. Some analogous studies in China showed the similar results in GPs' patient care ability[16]. Patient care is GP's basic ability[17], and is put firstly in both domestic and abroad GP assessments[18]. It was also one of the reasons that many GPs hoped to participate in postgraduation training[19][20]. In past GP training, the problem focusing on theory but ignoring practical skills was common[21]. Pan Xiaoyan and et al.[22] discovered that the operating score of GPs in Guangxi Province, China was only 63. Such problem was also prevalent among GPs in England and Germany[23][24][25].

4.3.2 Teaching ability

An admitted criteria were established and used to select eligible GP trainers in many developed countries. In UK, an investigation among specialists in both general practice and education showed that to be a qualified GP, 18 competencies were necessary, among which 6 were related to teaching[26]. In GMC in 2013, doctors are required that *"you must be competence in all areas of your work, including... teaching"(p.6)"*, *"You should be prepared to contribute to teaching and training doctors and students"(p.14)"*[27]. Administration as NHS, MRCGP and AMRC also reminded GPs of teaching ability[28]. In China, expert group suggested that teaching ability was one of three first-class indicators of the criteria for GP trainers[29].

4.3.3 Communication skill and Coordination ability

No matter domestic or abroad, communication and coordination ability was a shortcoming of GPs, though in this study they got a not low score. Some countries paid attention to the training and assessment of such abilities[30]. For example, the workplace based assessment(WPBA) in MRCGP was aimed to evaluate a doctor's performance of professional competence across 13 areas in the workplace[31].

4.4 Implications for research and practice

It is urgent and vital to improve GPs' teaching ability, in order to ensure the effect of GP standardized training and optimize the overall quality of GP training. However, lack of eligible trainers was a big problem, similar to our study[32]. Without accepting any formal GP education, some GPs in china was far away from being a trainer[33]. Interests is the basic of teaching. Our study discovered that nearly 25% GPs were *"unwilling to spend time in teaching"*. GPs are busy in work, and the reward of teaching was

too little to attract GPs' interests. In training process, students hoped to get more pragmatic skills, find the way of how to offer superior healthcare in CHS. But in most time, the expected effect could not present, partly due to trainers' failure in using various teaching methods. The cultivation of excellent GPs needs excellent GP trainers[34]. To improve GPs' teaching ability, what we need to do first is to inspire their interests, establish teaching performance appraisal and reward system[35]. Upper hospitals and medical colleges could found a GP trainer training center, hold training lectures regularly[36], and infiltrate advanced educational theories and methods into CHS.

GPs' teaching related variables——participating in GP trainer's training, working in training CHS and teaching experiences, showed positive correlations with the 3 kinds of abilities. This was consistent with the reality. Shanghai founded teaching CHS since 2012. Compared with the non-training CHS, the training CHS must be better in both facility support and GPs' teaching performance. GP trainer's training was on-job education especially for improving teaching ability and popularizing advanced methods. Teaching experiences were also a reflect of better medical care work competence. GPs performing excellent in daily work would be selected to participate in trainer's training on behalf of their CHS. Only after participating in the training and getting a certification, can they teach student in clinical work.

What's more, GPs who aged from 30 to 39 years old also got a higher score in patient care ability. Many younger GPs were the main force in CHS, and much more eager to learning.

However, it was surprising that GPs who accepted GP standardized training got a lower score in patient care ability and communication skill and coordination ability. Standardized training is a three-year learning. During the 3 years, trainees only spend no more than 1 year in CHS, which may not be their future working unit. Today, such training in China does not pay much attention to communication skill. Despite the same work duration, GPs accepting such learning might have little experiences of working in CHS and are relatively young, lacking of management experience. Communication skill and coordination ability is one of the necessary ability for GP to get patients' trust and to improve the understand and cooperation within team. Coordination is to solve patients' health problem in an easiest way within community condition[37], which was also an important work of GPs. So it is suggested to strengthen communication skill training and provide more CHS exercising opportunities in standardized training of GP.

5. Conclusions

The work competence of GPs in Shanghai's CHS largely meets the requirements of daily practice, but there is still great improving space in the aspect of teaching ability. Meanwhile, the deficiency in GP standardized training also need to be made up.

Abbreviations

ACGME Accreditation Council for Graduate Medical Education; AMRC The Association of Medical Research Charities; CFPC The College of Family Physicians of Canada; CHS community health service center; GP general practitioner; MRCGP Membership of the Royal College of General Practitioners; NHS National Health Service; WONCA the World Organization of National Colleges, Academies and Academic Association of General Practitioners/Family Physicians; WPBA The workplace based assessment.

Declarations

Ethics approval and consent to participate

All methods were performed in accordance with the relevant guidelines and regulations (Declaration of Helsinki). The confidentiality of all GPs was guaranteed, and the study protocol was approved by The Medical Ethics Committee of Zhongshan Hospital of Fudan University. Documentation of informed consent was secured at the beginning of the survey, and all GPs have read and agreed to the Informed Consent agreement.

Consent for publication

Not applicable.

Availability of data and materials

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

Competing interests

The authors declare that they do not have any conflicts of interests.

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Author's contributions

PZG is responsible for the design and funding of the research. WTH, ZY, ZXJ, GJ and LLM designed the questionnaire. WTH, RXY, ZY and GJ carried out the data collection, PZG supervised the project. RXY ,

WTH and GJL analyzed the data ,RXY and WTH drafted the first manuscript and responsible for revision. All authors participated in the critical revision of the manuscript and approved the final version.

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Table

Table 2 is not available with this version.

Figures

Figure 1

Distribution and flowchart of the sampled CHSs and GPs

Figure 2

Score of GPs' patient care ability

Figure 3

Score of GPs' teaching ability

Figure 4

Score of GPs' communication skill and coordination ability

Supplementary Files

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