

A cross-sectional survey on influencing factors of contracted services of Chinese family doctors : A quantitative and qualitative study

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Abstract

Background: The family doctor system has gained rapid ground worldwide. In recent years, China has been actively exploring family doctor-type contracted services. The purpose of this study was to explore the influencing factors of Contracted Family Doctors Services (CFDS) from the perspectives of community health service providers, administrators and medical staff, and it provides a strong basis for the development and promotion of CFDS. **Methods:** A combination of quantitative and qualitative methods was adopted in this study. A cross-sectional survey was conducted among community health service providers and administrators in 12 community health service centers across four provinces (Zhejiang, Anhui, Beijing, and Shanghai) of China. A total of 389 people took the survey. Ultimately, 320 questionnaires were valid. The effective response rate was 82.3%. A total of 36 consumers were interviewed through in-depth interviews. The total effective rate 100.0%. Exploratory factor analysis, confirmatory factor analysis, and expert consultation were used to analyze the influencing factors of CFDS. **Results:** The factors influencing CFDS from the perspectives of medical staff were divided into four dimensions, with the following weighting coefficients: national government (31.87%), community health service agency factors (24.73%), consumers-related factors (22.58%), and contracted doctor-related factors (20.82%). The factors influencing CFDS from the perspectives of patients/consumers were national policy factors, contracted team factor, and consumers-related factors. **Conclusions:** National governments, community health agencies, community health workers, and consumers play an important role in the advancement of CFDS. Therefore, the development of CFDS needs to consider the rights and interests of all stakeholders involved.

Background

The family doctor system, as an important policy measure to realize the *Alma-Ata Declaration's* grand goal of primary health care for all, has gained rapid ground worldwide [1]. According to a World Health Organization report, the proportion of all patients with diseases requiring specialized medical treatment was only about 5%, and more than 90% of health problems could be effectively solved by professionally trained general practitioners [2]. The role of general practitioners/family doctors, according to the World Organization of Family Doctors, is to provide comprehensive health care services to every person seeking them, and arrange for other health professionals to provide related services when necessary [3]. So far, this concept of family doctors has been accepted by many countries.

The family doctor system has been implemented in more than 50 countries and regions in the world and has achieved gratifying results in various aspects, which has attracted the attention of governments and medical circles [4]. There exist obvious differences in the specific service modes and operating mechanisms in various countries. Moreover, there is no doubt that the family doctor system plays an important role in medical and health service systems across countries. The family doctor system originated in the United States in the 1960s [5], when the government integrated health management into the community general practitioner service model [6]. At the same time, active follow-up observations were performed on patients with chronic diseases and during the rehabilitation period [6].

In the UK, the National Health Service was established in 1948 and adopted the national management model, which requires citizens to register their family doctors and sign contracts with them [7]. The Cuba established the family doctor program, in which a family physician and at least one nurse were each responsible for providing primary disease prevention and medical treatment services to 120–150 families [8]. The family doctor system in Denmark is a form of health care developed from the private doctor system, and each family doctor is responsible for a maximum of 1,780 health care-registered patients/consumers [9].

However, in China, the idea of “family doctors” was introduced in the 1980s, when “family doctor-type contracted services” were proposed. In recent years, China has been actively exploring family doctor-type contracted services. Relevant scholars have proposed some suggestions and directions for the development of contracted family doctor services (CFDS) and have also analyzed some influencing factors of CFDS.

Although there are existing studies on the influencing factors of CFDS in China [10–11], there are several differences in this study. First, this paper studied the influencing factors of CFDS as a whole, rather than just from a single point of view such as that of patients/consumers or medical staff. Secondly, the investigation area of this study is from typical areas of CFDS, rather than a single city from a certain area. **Thirdly**, the most important difference is that the study is set against the backdrop of China’s latest policies.

Based on the new policy environment, this study explored the influencing factors of CFDS from the perspectives of community health service providers, administrators and medical staff, which can help to improve the contracting rate of family doctors, to promote the health of consumers, and to provide a basis for the government and the health administration to formulate policies for CFDS.

Materials And Methods

Study design and population

A cross-sectional survey was used to select 12 community health service centers in four regions of Zhejiang, Anhui, Beijing, and Shanghai provinces in a typical area survey. The cluster sampling method was used to conduct a questionnaire survey on the directors of the community health service centers, the CFDS team from community health service agencies, and the administrative staff. Moreover, convenient sampling method was used to conduct in-depth interviews with patients/consumers in the same regions.

Data collection

Data were collected from July through September 2017. Respondents filled out an anonymous questionnaire after providing informed consent. A total of 389 questionnaires were distributed. While all of them were returned, 320 questionnaires were valid (total effective rate 82.3%). The reasons for

elimination included incomplete questionnaires, multiple omissions, or multiple choices. We interviewed 3 patients/consumers in each community health service center. A total of 36 patients/ consumers were interviewed. The total effective rate 100.0%.

Questionnaire

The Questionnaire on the Influencing Factors of CFDS was designed based on five steps. First, we tried to select as many items as possible by searching for relevant literature [12–13]. Then, these items were summarized and collated through four times panel discussions, and items with similar or repeated meanings are deleted. Next, five experts (including health service management experts, public health experts, and contracted services researchers) were consulted to revise and improve the questionnaire. Finally, pre-study was conducted at four community health service centers in Harbin City. The 120 questionnaires were distributed and returned (pre-study data were not included in the final data analysis). Based on this, the questionnaire was further refined and finalized (Cronbach's α for the questionnaire was 0.865). Data were collected using the final questionnaire, which comprised the following sections:

1. Sociodemographic information (including gender, age, education level, professional title, etc.).
2. The influencing factors of CFDS, including 29 items. Using the Likert five-point scale, each item was divided into five levels (very important, important, general, unimportant, and very unimportant) according to the influence degree. Participants rated each item according to their own experiences.

Data analysis

Data were analyzed using IBM SPSS Statistics 20.0 and AMOS 21.0. Descriptive statistics were used to analyze the demographic characteristics of participation in community health service agencies. Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were used to determine the influencing factors of CFDS. It is suitable for EFA if Kaiser-Meyer-Olkin (KMO) is greater than 0.7. The number of factors are assumed beforehand according to the actual conditions, or the number of dimensions can be determined according to the criterion of the characteristic root greater than 1 or the Scree Plot. The principal component method was chosen to extract the common factor. The items were excluded according to the following criteria: a factor load of <0.40 ; a higher load on multiple factors; and a factor with less than three items included. The orthogonal rotation was used to explain the factor structure reasonably. The model was considered to have a good fit when all path coefficients were significant at the level of 0.05; χ^2/df was below 5; the root mean square error of approximation (RMSEA) was below 0.08; the root mean square residual (RMR) was below 0.10; and the goodness of fit index (GFI), the normed fit index (NFI), Tucker-Lewis incremental (TLI) fit and comparative fit index (CFI) were ≥ 0.90 . A p-value of <0.05 was considered statistically significant.

Results

Results of in-depth interviews

Through in-depth interviews with patients/consumers, the reasons why they were more willing to accept CFDS are summarized. For example, patients/consumers' understanding level of CFDS; benefits of CFDS; concern about one's own health; the degree of family doctors' protection of patients/consumers' privacy; cost and process of signing a contract; satisfaction with the community; and advocacy of contracting services, etc. The keywords extracted from the interviews were counted and found that the factors affecting CFDS were as follows: national policy factors, contracted team factor, and consumers-related factors.

Demographic characteristics of community medical staff

The demographic characteristics of the medical personnel are shown in Table 1.

Analysis of the influencing factors of CFDS

Exploratory factor analysis

The KMO value calculated was 0.836, which is within the scope of factor analysis (if the KMO value is close to 1, the variable group is suitable for factor analysis). Results showed that data could be used for factor analysis.

After finishing the orthogonal rotation of the factor load matrix, the remaining 25 items made the characteristic root >1 , the maximum variance was orthogonal rotation, seven factors were extracted from the system, and the cumulative variance contribution rate of 67.613% is shown in Table 2. From Table 2, it can be clearly seen that 25 observational variables were clearly classified into seven common factors. Based on the results of the group discussion among project team members, seven factors were named according to the characteristics of the variables observed. F1 was "national policy factor", the combination of F2 and F3 was "resident factors", the combination of F4 and F5 was "contract doctor factors", and the combination of F6 and F7 was "community factors".

Confirmatory factor analysis

The results of the CFA were as follows: the RMSEA was 0.059, and thus was less than the 0.08 cutoff that indicates a good fit; the RMR was 0.05; The TLI, NFI, GFI, and CFI were 0.913, 0.902, 0.905, and 0.917, respectively.

Results of expert consultations

The health and family planning commission, contracted services researchers, and administrators were selected to carry out an expert consultation. The above results were modified according to their inputs, and the final versions of the predisposing factors are listed below.

In the first round of consultation, the name of each dimension in the model was modified: “national policy factors” was revised to “national government factors”, “resident factors” was revised to “consumers-related factors”, “contracted doctor factors” was revised to “contracted doctor-related factors”, and “community factors” was revised to “community health service agency factors”.

The second round of consultation integrated the dimensions of the model. The experts deemed that, “situation of the first diagnosis of the patients/consumers” should be incorporated into the resident-related factors dimension rather than contracted doctor-related factors.

The final determinants of the factors of CFDS

The final determinants of the factors of CFDS are shown in Table 3.

Calculation of the factor weight of influencing factors of CFDS

The cumulative variance contribution rate of F1–F7 was 67.613%. The weighted mean of the variance contribution rate of each factor was calculated, and the evaluation formula of the comprehensive score was obtained: $F = (0.302F_1 + 0.107F_2 + 0.0701F_3 + 0.0571F_4 + 0.0531F_5 + 0.0458F_6 + 0.0406F_7) / 0.676$. Indicator weight = composite score/model coefficient.

Based on the above results, we merged similar factors into four dimensions. Finally, the weight coefficients of the common factors were 0.319, 0.247, 0.226, and 0.208, respectively (see Table 4 for specific details).

Discussion

Compared the factors affecting CFDS from the perspective of patients and medical staff, we found that the factors of national policy and community health service agency are two important common factors affecting CFDS.

The results showed that the national government factor is the main trigger that affects CFDS. The government, as the dominant force in the establishment and operation of contracted services, is

obligated to ensure the smooth progress of CFDS, to guarantee the fairness and accessibility of services, and to be the conductor of the contracted services policy.

The government has developed universal health insurance coverage, basic public health service plans, and the national essential drug system, all of which have improved access to and affordability of primary health care [14]. From the perspective of the national government, it is very important to increase financial support for primary health facilities and special funds. At the same time, the government should play its part in macroeconomic regulation and control and combine related departments such as finance and social security to increase support for the inclination to support of the community medical institutions, and guide the insured personnel to give priority to primary clinics. In addition, public health services such as health management and health education conducted by family doctors should be included in the scope of medical insurance. CFDS should be linked with medical insurance, giving play to family doctors' gatekeeper role in terms of medical insurance control fees and health management.

The results showed that the community health service institutions factor ranks second. The community health service agency is the executor of the contracted services policy. The extent of its power of execution directly determines the direction of CFDS, and the completeness of the hardware and software facilities of a community health service organization is the basis of its power of execution. Therefore, the degree of development of its informatization, medical facilities and equipment within the institution, and performance assessment and incentive mechanisms are all necessary conditions for the promotion of contracted services. At the same time, the supporting hardware facilities of the community health service institutions, including equipment and drugs, are insufficient, which impedes the development of CFDS. However, family doctor team members, as important stakeholders of the medical alliance, can mobilize their enthusiasm and achieve the sustainable development of contracted services only if they are allowed to obtain reasonable benefits from contracted service operations [15]. Therefore, some suggestions are put forward from the perspective of community health institutions. First, community health institutions should speed up the development of a unified information platform to achieve dynamic management of contracted patients /consumers' information and analysis of the dynamics of consumers through real-time data monitoring. At the same time, community health agencies should increase investment in hardware facilities, thereby making medical services more accessible to patients/consumers, changing their views on primary medical care and increasing satisfaction with primary health services [14]. The most important point is that salary not only helps employees fulfill basic survival needs but is also a way of recognizing and respecting employee performance and contributions [16]. Therefore, community health agencies should establish a sound supporting performance appraisal system and incentive mechanism, so as to increase employees' enthusiasm toward their work, helping them better serve patients/consumers.

Consumers-related factors have a great impact on contracted services. As important stakeholders involved in the reform of China's health care and CFDS, patients/consumers are mainly concerned with medical technology, medical expenses, emotional support, and respect. With the development of the medical system and the improvement of the economic level, patients/consumers' demands for overall

medical services have been increasingly met, and service quality is a key factor in attracting patients/consumers. Therefore, the service quality of community health service centers and the level of medical technology should be improved. This will increase patients/consumers' sense of identity and belonging, and improve their satisfaction. Therefore, community health organizations should strengthen the talent team construction of family doctors in all aspects, conduct regular training for family doctor teams, and attract graduates of general medicine or specialists in second and third-level hospitals who have undergone standardized training. At the time of diagnosis, the team of family doctors should pay attention to service attitude, reduce the distance between themselves and patients, and provide humanistic care.

Factors related to contracted doctors are also influencing factors of CFDS. Family doctors and team members are the flag-bearers of CFDS, and their service capabilities, willingness, and attitudes all influence its smooth development. According to the "Guiding Opinions of the State Council on Establishing the General Practitioner System," training qualified family doctors by vigorously carrying out transfer training for community doctors and raising the academic qualification level of community doctors can also reduce the workload of existing family doctors and teams, thus providing more effective help for each resident.

Limitations

This study has two limitations. First, the sample size of the study is small; a typical survey needs to select a sample representative of a typical unit, so there is a higher requirements for judgement ability of the researchers, otherwise it may cause investigation conclusion has the certain bias tendency, and the results of typical survey in general is not easy to calculate the overall situation.

Conclusions

National governments, community health agencies, community health workers, and consumers play an important role in the advancement of CFDS. Therefore, the development of CFDS needs to consider the rights and interests of all stakeholders involved.

List Of Abbreviations

CFDS: Contracted Family Doctors Services; EFA: Exploratory factor analysis; CFA: confirmatory factor analysis; KMO: Kaiser-Meyer-Olkin; RMSEA: root mean square error of approximation; RMR: root mean square residual; GFI: goodness of fit index; NFI: normed fit index; TLI: Tucker-Lewis incremental fit; CFI: comparative fit index

Declarations

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Authors' contributions

HW, LS and XH conducted calculations, analyzed results, drafted the manuscript, and contributed equally to this work. HW, LS and LF were responsible for the overall design of the research, organized and conducted the survey, and designed the analyses framework. HW, LS and XH revised the paper. HW, LS, XH and JZ assisted with the literature review and data collection. All authors approval of the current version of this manuscript for publications.

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Availability of data and materials

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

Ethical approval

This research project was approved by the Medical Ethics Committee of Harbin Medical University. Before the survey, we received approval from the community health centre.

Consent for publication

Not applicable.

Competing interests

The authors declare no conflicts of interest.

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Tables

Table 1. The Demographic characteristics of community medical staff (N=320).

Demographic characteristics	n	Percent (%)
Gender		
Male	89	27.8
Female	231	72.2
Age (years)		
≤30	63	19.7
31-40	143	44.7
41-50	90	28.1
≥50	24	7.5
Level of education		
□Bachelor	69	21.6
Bachelor	221	69.1
≥Master	30	9.3
Professional title		
No	14	4.4
Junior	100	31.3
Intermediate	139	43.4
Senior	67	20.9
Professional		
General practice	119	37.2
Chinese medicine	25	7.8
Rehabilitation	14	4.4
Nursing	76	23.7
Preventive health care	38	11.9
Administration	24	7.5
Other	24	7.5
Years of experience (years)		
□4	39	12.2
4-7	47	14.7
7-10	50	15.6
□10	184	57.5
Employment form		
Formal employee	228	71.3
Contracted employee	81	25.3
Temporary employee	10	3.1
Other	1	0.3
Monthly income (RMB)		
≤2000	16	5.0
2001-4000	63	19.7
4001-6000	124	38.8
6001-8000	85	26.5
8001-10000	24	7.5
□10000	8	2.5

Table 2. Rotation component matrix.

Items	Component						
	F1	F2	F3	F4	F5	F6	F7
X1National financial allocations	0.850						
X2Extent of national policy support	0.838						
X3Extent of policy support for family doctor service	0.801						
X4 Government propaganda	0.745						
X5Local government's investment in special funds for contracted family doctor service	0.708						
X6Extent of reduction in the incidence of disease because of patients/ consumers signing up for this service		0.850					
X7Extent of reduction in patients/consumers' medical costs because of signing up for this service		0.817					
X8Extent of improvement in the convenience of medical treatment because of signing up for this service		0.736					
X9Extent to which community patients/consumers trust their family doctors			0.723				
X10 Patients/consumers are satisfied with the contracted services			0.690				
X11A good medical environment			0.609				
X12Extent to which patients/ consumers respect, support, and cooperate with family doctors			0.602				
X13Extent of contracted doctors' general medical knowledge and mastery of skills				0.857			
X14Degree of contracted doctors' health management knowledge and skills				0.775			
X15Extent of the increase in workload				0.585			
X16Situation of the first diagnosis of the patients/consumers				0.488			
X17Awareness of family physician policy					0.790		
X18Self-working ability					0.726		
X19Followthe family doctor's wishes					0.706		
X20Degree of development of informatization of community medical institutions						0.837	
X21Completeness of the performance assessment mechanism of the family physician in the community						0.717	
X22Community medical equipment update and supplement situation						0.711	
X23Situation that the resident gives the family doctor subsidy after signing a contract							0.814
X24Incentive mechanism							0.683
X25Recognition of work by the leadership							0.541

Table 3. The factors of contracted family doctors services.

Dimensions	Component
1. National government factors	1.1 National financial allocations
	1.2 Extent of national policy support
	1.3 Extent of policy support for family doctor service
	1.4 Government propaganda
	1.5 Local government's investment in special funds for contracted family doctor service
2. Community health service agency factors	2.1 Degree of development of informatization of community medical institutions
	2.2 Completeness of the performance assessment mechanism of the family physician in the community
	2.3 Community medical equipment update and supplement situation
	2.4 The situation that the resident gives the family doctor subsidy after signing a contract
	2.5 Incentive mechanism
	2.6 Recognition of work by the leadership
3. Consumers-related factors	3.1 Extent of reduction in the incidence of disease because of patients/consumers signing up for this service
	3.2 Extent of reduction in patients/consumers' medical costs because of signing up for this service
	3.3 Extent of improvement in the convenience of medical treatment because of signing up for this service
	3.4 Extent to which community patients/consumers trust their family doctors
	3.5 Patients/consumers are satisfied with the contracted services
	3.6 A good medical environment
	3.7 Extent to which patients/consumers respect, support, and cooperate with family doctors
	3.8 Situation of the first diagnosis of the patients/ consumers
4. Contracted doctor-related factors	4.1 Extent of the increase in workload
	4.2 Contract doctor general medical knowledge and skill mastery degree
	4.3 Extent of contracted doctors' general medical knowledge and mastery of skills
	4.4 Awareness of family doctors policy
	4.5 Self-working ability
	4.6 To be the wishes of a family doctor

Table 4. Weight and ranking of influencing factors for family doctor contracted services.

Sequence	Factor	Weight (%)	Sequence
1	National government factors	31.87	1
2	Community health service agency factors	24.73	2
3	Consumers -related factors	22.58	3
4	Contract doctor- related factors	20.82	4