Patients' Preferences in Selecting Family Physician in Primary Health Centers: A Qualitative-Quantitative Approach

Farnaz Khatami
  Tehran University of Medical Sciences

Mohammad Shariati
  Tehran University of Medical Sciences

Leila Khedmat
  Bagiyatallah University of Medical Sciences

Maryam Bahmani (✉ maryambah98@yahoo.com)
  Tehran University of Medical Sciences

Research article

Abstract

Background The role of family physicians (FPs) in the metropolitan area is critical in identifying risk factors for diseaseprevention/controland health promotioninvarious age groups. Understanding people's preferences and interests in choosing a FP can be an effective and fundamental step in the success of this program. In this study factors affecting the FP selection by Iranian people referred to health centersin the most populous areas in the south of Tehran were assessed and ranked.

Methods Asequential mixed-method (qualitative-quantitative) triangulation approach was designed with three subject groups of people, physicians, and health officials.The Framework method was used to analyze interviews transcribed verbatim. After implementing an iterative thematic process, a 26-item quantitative questionnaire with high validity and reliability was draftedto evaluatethe different factors.A convenient sampling method was usedto select 400 subjectson a population-based scale to quantitatively rank the most critical selection factors.

Results The selection factors were divided into six centralized codes, including FPs' ethics,individual, professional and performance factors;patients underlying disease and individual health, and disease-related factors;clinic-office's location and management factors;democracyfactors;economic factors; andsocial factors. After filling out the questionnaires,the most important factors in selecting FP were aspecialistdegree in family medicine (FM), performing accurate examinations, taking correct biography, and spending enough time to visit by the doctor, respectively. However, the parameters such as being a fellow-citizen, being same gender, and physician's appearance were of the least importance.

Conclusion There is a necessity to expand the new medical specialty in FM because it was considered as the first people's priority. The clinical andadministrative healthcare systems should schedule the entire implementation process to oversee the doctor's professional commitment and setting the visit times of FP.

Background

Health is the foundation of the social, political, and cultural development of all human societies. As it is of particular importance in the formation of infrastructure in different parts of society, the ultimate goal of any country's healthcare system is to improve the health of individuals so that they can participate in social and economic activities with adequate health (1).In this regard, attention has been paid to social inequalities in access to health services and followed by the need for reform aiming at increasing the productivity of the healthcare system has begun in many areas of the world (2). One of the most successful and comprehensive health plans in the developing and developed countries is presenting the package of health care services recommended by family physicians (FPs).The FP is responsible for providing health services within a defined range, without any prejudice to age, sex and socioeconomic status to the individuals, families, and communities (3–5). In Iran, FP program was launched in rural areas and cities with fewer than 20,000 people. It is currently pursuing its output in urban areas in several

Iranian provinces (6). In Iran, Essential Package of Health Services (EPHS) in primary care is related to services provided by a team in the health system in the rural and urban areas, which is usually located close to people's residences. The EPHS in primary care in Iran includes: (i) prevention: immunization, prevention and control of communicable and non-communicable diseases, prevention of unwanted pregnancies, oral hygiene, and mental health, (ii) health promotion: health education, and learning healthy lifestyles and life skills, (iii) early treatment and emergency management: visiting the office, diagnosing and treating diseases, performing simple surgeries such as stitches, vasectomy or circumcision, injections, dressing, home visits, and cardio-respiratory resuscitation, (iv) referral: eligible patients for secondary or third level specialty care, and (v) health management: the record of population's health information, advocacy, and monitoring the work of health team members (3,7).

Therefore, implementing the FP program is a necessity to meet the public health needs, address the unnecessary increase in health costs, and prevent its adverse impact on public health (8–9). On the other hand, one of the essential principles for the provision and development of health care services is the need to pay attention to the collaboration and participation of people and physicians in the program. The active involvement of all people is also essential for its successful implementation and requires effective communication with patients, families, and the community to achieve an integrated and efficient model (10).

Different factors affect the patients' thoughts to choose a primary care doctor. In recent years, the issue of doctor selection, especially in developed countries, has received serious attention from health policymakers and health insurance organizations (7). Patient-led physician selection leads to greater competitiveness of physicians, improved service quality, better access to medical services, and increased care efficiency (3, 11). However, there is a minimal research background on determinant factors in choosing the FP by patients in Iranian populations. Despite the generalization of the FP program in Iranian urban society, a comprehensive study to determine the most critical personal-social factors in the selection of FPs by patients has not been conducted yet. Therefore, the current study aimed to evaluate factors affecting FP selection in the covered population of health centers in the south of Tehran.

Methods

Study design and participants

A qualitative-quantitative mixed study was carried out between 2018 and 2019. Two approaches of relevant literature review and interview were applied to assess the influencing factors on the FP selection. The selected strategy of interviewees was purposive that included three groups of physicians, health system managers (HSMs), and people referring to the healthcare centers, who were selected with a triangulation method. This technique is typically used to evaluate an issue by explaining its different aspects. The triangulation method ensures the data validation via cross verification from more than two sources (12). According to the obtained results in this studying phase, the questionnaire was developed based on the internal expert panels' (IEP) and some participants' comments and distributed among 400

participants to identify people's priorities in choosing an FP. The sample size (n) was calculated using the following formula (Eq. 1):

$$n = z^2 p(1-p)/d^2 \qquad (1)$$

where z, p, and d are the 95% confidence level based on the standard normal distribution ($z = 1.96$), estimated proportion of the population presenting the characteristic (for unknown, $p = 0.5$), and tolerated margin of error ($d = 5\%$), respectively (13). Accordingly, the sample size for the current study is ~385. However, based on the attrition risk of 10%, the sample size to compensate was reached to 400 subjects.

Then, the designed questionnaire was distributed to a population of patients referring to hospitals and health centers in the south of Tehran through available sampling in a field study. The voluntary individuals with at least 18 years old were included in this study. Illiterate patients were asked to assist the questioner or patient companion by reading the questions.

Survey development and administration

Literature search and screening

A review of the literature was carried out to extract the most important factors influencing FP selection in books, articles, and texts (Table 1). The main keywords used to search in different scientific databases within 1987-2018 were: family physician, patient satisfaction, primary care, health care behavior, and continuity of care. About 80 articles, including studies conducted in Iran and other countries, were reviewed, and finally, 57 more relevant articles were selected as the reference.

Research team and reflexivity

Four qualitative researchers involved with research process. All were medical doctors. One was male and three were female. They had experience in designing qualitative studies, writing qualitative books and teaching in this field. To reduce bias, team had not close familiarity with participants. Interviewees were selected based on their experiences with triangular techniques. The research team and also the aims of the study were explained to the subjects and entered into the study if they wish to cooperate and contribute with team to promoting community health.

Interview procedure

A step-by-step guide on how to properly conduct a face to face interview was applied, and after transcripts confirmed by participants, the content was analyzed according to the complementary viewpoints of an IEP. Interviews in each part were continued until EQIs were satisfied that the data showed saturation. Three population groups including physicians (n=47), HSMs (n=5), and people (n=30) were interviewed as follows: The group of physicians consisted of three categories: (i) specialist doctors (SDs), (ii) family medicine residents (FMRs), and (iii) general practitioners (GPs) who were active as FPs in the rural and urban area. The interview open ended questions of each group were designed by the

research team and piloted by the target groups and the necessary corrections were made and finalized. It is worth noting that only two of health managers and three physicians due to busy, not cooperate with us for an interview.

Interview with physicians' group

In the first category, FMRs of Tehran University of Medical Sciences (TUMS)were interviewed in an 20-person group meeting. At the beginning of the meeting, the research topic and its purposes and applications were explained, and any ambiguities were resolved. The answers were kept confidential, and the FMRs were then asked to provide their comments on the sheet if they were satisfied with the cooperation. Ongoing verbal interviews were developed with open-ended questions. In the second category, a group of SDs of the hospital from clinical faculty members at TUMS was interviewed in person with open and in-depth questions. All interviews were then recorded and transcribed. In the third category, GPs, who acted as FPs, were interviewed. For comprehensive interviews, urban FPs occupied in the national pilot of the FP plan in Mazandaran province (Amol city, Iran) with at least seven years of work experience, and rural FPs in healthcare centers of the south of Tehran with 3-10 year work experience were considered. The experienced qualitative interviewers (EQIs) conducted interviews for 20-45 minutes, audio-recorded, and transcribed verbatim. Field memos documented immediately by the interviewer at the interview time.

Interview with health system managers' group

Open and in-depth interviews with HSMs were conducted after multiple coordination and verbal consent. Each interview with HSMs with a management history of 17-28 years lasted from 40 minutes to an hour in workplaces.

Interview with people' group

The subjects were interviewed from referrals to Ziaeian Hospital and healthcare centers in the south of Tehran after the oral and written informed consent. According to the expert instructors' opinions, 2-3 general questions of the main factors obtained from the literature review as a result of the content analysis were asked. The in-person, individual, semi-structured qualitative interviews for 20 -30 minutes were conducted with people.

Qualitative data analysis

The 5 main stages thematic framework analysis method was used to analyze the qualitative data obtained from the conducted interviews and included: (i) familiarization, (ii) identifying a thematic framework, (iii) indexing, (iv) charting, and (v) mapping and interpretation (12). The familiarization phase was based on the principle of immersion, by repeated reading of transcripts, and written notes taken during interview, line by line, by two coders. This step aimed to list key ideas and recurrent themes and to correctly edit a summary of the content of each interview (Table 2). In this table, items and interviewees' characteristics were displayed in the columns and rows, respectively. After sequential comparisons for

each item category, a framework entitled "sub-theme" was selected (Table 3). In the indexing stage, the thematic framework was used in a textual form by explaining the transcripts with the principal and centralized codes from the index. The theme and sub-theme were centralized and principal codes, respectively. The codes were discussed by two coders to make coding decisions. For instance, each interviewee in HSMs' group was explained as "M" so that "M1" to "M5" indicates the participant number of 1 to 5. Similarly, relevant codes were considered for the rest of the participating groups. Table 4 were then composed of selected summaries of viewpoints in the 'charting' stage. A table was separately tabulated for each group of interviewees by specifying their opinions with an appropriate code in each column, while the principal and centralized codes were defined in the table rows. In the final step of 'mapping and interpretation', tables drawn for each interview group were put together and compared to find correlations between themes with a view to providing clarifications for the results (14- 15). An update was performed in the analysis process of the thematic framework regarding certain coded items that started to cluster, and others separated.

Questionnaire design

All the influencing factors by incorporating the themes mentioned by each of the interviewed groups were identified. These fundamental elements emerged with the principal and centralized codes in terms of 43 questions. These question items were then evaluated by the IEP and some participants to present specialized corrections and dedicated processing strategies. After the revision step, frequent questions with a centralized or principal code were put together. Some of the questions were eliminated due to raising unreasonable expectations. According to the experts opinions, 26 of the original 43 questions in a short and precise form were arranged. A draft of a questionnaire was then constructed with two main sections of demographic data (e.g., gender, marital status, education level, and health insurance status), and questions related to the various factors affecting the choice of FP. The 26-item questions consisted of four centralized codes and five principal codes. In general, items included questions related to health-related physical factors (6 cases), patient-related factors (2 cases), social factors (5 cases), and physician-related factors (13 cases). Answers to questions for each item were presented on a 5-point Likert scale. Items were rated based on a 5-point Likert scale for levels of satisfaction and importance. Answers ranged from labels of "dissatisfied" and "not very important" (scored as 1.0) to "very satisfied" and "very important" (scored as 5.0); with the total score sum of 26-130.

Questionnaire validity and reliability

The qualitative content validity of the developed questionnaire was assessed based on the viewpoints of 20 people of the studied population and ten individuals of IEP, who had research experience or worked in the field. Twenty participants initially completed the questionnaire to determine whether the designed questions were ambiguous or not? Fortunately, there was not a significant problem in the fluency and understandability of the items so that the response rate ranged from 5 to 85%. Subsequently, 10 IEP members confirmed the re-revised questionnaire by presenting more specific recommendations and better and more obvious questions. In the quantitative content validity, confidence is maintained to select the

most important and correct content in a data collection tool. In this assessment, the experts are asked to agree whether an item is essential for operating a construct in a set of items or not? Accordingly, the content validity ratio (CVR) was determined by the following equation (Eq. 2):

$$CVR = \left(N_e - \frac{N}{2}\right) \Big/ \frac{N}{2} \qquad\qquad (2)$$

where the N_e and N are the number of panelists indicating "essential" and the total number of panelists, respectively (16).

The Lawshe Table was used to estimate the numeric value of CVR. The minimum acceptable CVR (MA-CVR) according to the count of scoring panelists. The MA-CVR for each item should be 0.62 as the number of experts was 10in this study (17). In this study, the MA-CVR for each item present in the prepared questionnaire was more than 0.62. The Waltz and Bausell's method was used to assess the content validity index (CVI) for each item by dividing the number of experts who ranked the items as compatible or full compatible for each criterion (relevancy, clarity, and simplicity) to the total number of experts (18).The mean value of the three criteria was considered as the total CVI for each item. Overall, a CVI value of more than 0.79 for each item was appropriate to be retained (19). The mean of CVI for the developed questionnaire was calculated to be 0.88. The questionnaire's reliability was evaluated by calculating the internal consistency reliability coefficient "Cronbach's alpha". Bland explained that this coefficient should be ≥ 0.8, while alpha equal to 0.7 is also acceptable (20). The Cronbach's alpha for the constructed questionnaire was 0.845, showing its high reliability.

Quantitative data analysis

The results of completed questionnaires with the data coding were analyzed using the SPSS software package version 22.0 (SPSS Inc., Chicago, IL, USA).

Results

Qualitative data

A thematic framework was used to analyze the qualitative data in all the groups with 6 themes (centralized codes: F, P, C, D, E, and S) and 10 sub-themes (principal codes). Table 3 shows the definitions and indexes of six centralized codes related to the qualitative data.

The centralized code of "F" or theme of "family physician factor" involves factors relevant to the physician and divided into three sub-themes of F1 (ethics), F2 (individual), and F3 (professional and performance). In the principal code of F1, most of the items mentioned in the study groups included physician's good behavior interaction in interacting with patients such as kindness and empathy with the patient, respect and value the patient, punctuality, proper listening and communication skills, accountability for errors, answering to patients' questions with patience and keeping the patient's medical

secrets. The most frequent physician's individual characteristics in the code of F2 were doctor's neat, clean-cut appearance, gender, and face mode with a high speech power to convey respect for his/her self-knowledge to the patient and to build trust. Also, it was so important to speak the local language for many indigenous patients. Physician's professional and performance factors were classified in the code of F3. The influential professional parameters from the perspective of the different interviewed groups were doctor's experience and expertise, good clinical skill, carefulness in medical examinations(e.g., biography, medical history, presenting adequate information about diseases, patient's guidance or training, follow up and continuity of care), up-to-date knowledge and high scientific level, reputation, looking like a doctor (by wearing uniform, stethoscope, etc.), staying focused on the patient during the visit, and the effectiveness of the physician's actions on the previous visits. Moreover, the most critical of performance parameters with strong influence on attracting the patient's opinions included correct and necessary referral of patients to specialized medical centers and clinics, avoiding any unnecessary referral for paraclinical and interventional examinations, assigning sufficient time to visit, actively listening and paying attention to the patient's talk, giving ample opportunity to make conversation with the patient, providing excellent and comprehensive emergency and preventive services to the patient, and spending high-level medical training courses. However, looking at light-emitting personal electronic devices (e.g., computers, tablets, and smartphones) and making silence during the visit had a negative effect on the FP's choice.

The centralized code of "P" or theme of "patient factor" with two indexes of P1 (underlying disease and individual health) and P2 (disease-related factors) was defined. The severity of illness and need was diagnosed as the main factor in the code of P1, whereas the patient's satisfaction in the previous examination with the physician or the patient's trust in the physician was the key influential factor in P2.The centralized code of "C" or theme of "clinical factor" was about the physical factors of the doctor's office or clinic, which includes two main indexes of C1 (location factors) and C2 (management-related factors). Some of the location factors were geographical proximity, convenient accessibility, and cleanness of the well-equipped and stylish doctor's office. In the sub-theme of C2, short waiting time, high availability to the physician in more weekdays, and the nearness of other health services (e.g., laboratories and pharmacy) to the doctor's office or clinic.

Each centralized code of D (diplomacy), E (economic), and S (social) included one sub-theme. Themes and sub-themes show consistency of data and findings. The main political factor affecting the FP choice was government decisions on the distribution of physicians in different geographical areas covered by the FP plan in the health system. Therefore, patients have to choose their doctor based on these divisions, and these limitations can significantly affect people's choices. The code of E shows people's economic access to doctors. Most patients prefer to choose physicians with free or low-cost visit price. However, some patients choose physicians in the private sector because they believe these doctors have a higher level of care and knowledge. The most important social factors affecting the patients' choice were being fellow-citizen, having a specialist degree, satisfaction and experiences of other patients, recommendation of health care workers, friends, and acquaintances, social and media publicity, and people's religious

beliefs, customs, awareness, and cultural expectations. Table 4 shows charting stage of framework from the viewpoints of HSMs and physicians.

Quantitative data

After obtaining the data codes from the qualitative study section, a new questionnaire was designed with high validity and reliability to evaluate the quantitative data. Four hundred people (70.75% women and 29.25% men) in the age range of 18-76 years (age mean of 38.6 years) were participated to fill out the questionnaire. The people number with educational levels of under diploma, diploma, bachelor, and master and above were 23.5, 53.5, 15.3, and 3.3%, respectively, while 4.5% of those were illiterate. Also, 79.8% of the participated subjects were married. Most of the individuals (85.5%) had health insurance to cover all or part of medical costs (Table 5).

Overall, the highest score among the 26 questionnaire items belonged to being a family physician specialist. After that, performing careful examination with receiving a detailed medical history, and assigning enough time to visit patients were other items influencing the FP selection, respectively. However, the following factors were also ranked with the lowest scores by the people, respectively: (i) being fellow-citizen or having the same mother tongue, (ii) the patient's tendency to same gender doctors, and (iii) doctor's appearance (neat, clean-cut, with wearing a uniform) (Table 6). From the gender perspective, females after these notes gave low rates to items such as recommending the physician by friends and acquaintances, and the time accessibility to the doctor. However, the lowest scores for males after being fellow-citizen, being same gender, and referrals from friends and acquaintances were related to the FP's appearance and access time (Table 6).The participated women and men similarly mentioned that the physician's specialty, the complete and exact examination and assigning sufficient time to visit were the most important factors influential patients' choice. Among the female participants, the physician's intelligible and clear expression accompanied by the regular follow-up was significant after the main common factors. In the case of male participants, the rational prescription of drugs and radiology with other associated services such as laboratory and pharmacy were effective after the first two common factors. Women compared to men paid more attention to items like waiting time for a doctor's visit, the illness follow-up, and good morals and behavior, while men were more important in the physician's office appearance and equipment and her/his characteristics such as trust, confidentiality, and reputability (Table 6).

As majority people (81.5%) had an educational level lower than bachelor's degree, items with the highest (having the specialist degree, accuracy in examination, sufficient time assigned to visit) and lowest (doctor's appearance, gender, dialect/language, and city of birth) scores was very similar to the total population of the study. In people with a bachelor's degree or higher (18.5%), the highest score was given the examination accuracy and receiving the correct medical history, having the expertise of an FP, and the physician's ability to transmit the knowledge in an explicit expression, respectively. Nonetheless, the lowest scores were related to being fellow-citizen, being same gender, and then recommending the doctor

by friends and acquaintances. This study showed that marital status and insurance were not significant factors in choosing a physician.

Discussion

The most important factors affecting the choice of an FP by people out of 26 items were the specialist degree in FM, followed by careful examination and history, and assigning sufficient time to visit. Bornstein conducted an exploratory cross-sectional survey of parameters influencing American patients' choice of a primary care doctor. Results revealed that the participants highlighted relevant professional factors (e.g., the validity of FP's degree and office appearance) and management practices (e.g., appointment times (nights and weekends)) more than the FP's inherited characteristics (e.g., race, age, gender, etc.). Also, the most important factors found by 636 patients in choosing an FP are those that have the most significant impact on the quality of health care (21). Mosadeghrad and Joya reported that the process and type of medicinal services provided by physicians were the most important reasons for patients' choice in Tehran city (13). Grol and et al. assessed the highest priority of patients to choose physicians in Europe. These factors included having adequate time during the visit, delivery of health care services under emergency conditions, the confidentiality of patients' information, and presenting explanations required about the illness to each individual. Similarly, assigning enough time to visit patients was the main priority in choosing physicians (22). Nouronnesa also found that the most important priorities were the physician's skills and expertise, getting a complete medical history under the careful checkup, and how to answer a doctor to the patient's questions (23). In our study, receiving a detailed medical history with a careful examination was determined as the second priority after having an FP specialty. In contrast to the views of people referring to target healthcare centers, health system managers in their interviews did not point out having a degree in FM as a priority for the effective implementation of the FP plan. This fact shows the importance of launching a specialty in FM in the country.

Results indicated that the least importance belonged to the citizenship, being same gender, and appearance of FP.As our study area geographically is more populated by immigrants than in other cities in the country, the same dialect, ethnicity, and race from the people's point of view do not matter much to refer to a doctor. Similar results were reported by Bornstein in the US (21). However, Bachmann in a qualitative study, realized that Russian-speaking migrants were less satisfied with primary care consultations compared to native Germans (24). The cause of dissatisfaction with treatment may be attributed to the more inferior patient-physician relationship and frequent physician changes. Therefore, physicians need to be more aware of the cultural expectations of immigrants in order to better understand their needs, improve the relationship between physician and patient, and ensure equal opportunities in health care. It was earlier proved that the leading cause of people's choice in the UK was the proximity of physician office to patients' home, the suggestion of patient's friends, and previous visits of patients' family members by the selected physician (25). In the present study, access to the office place had relative importance, whereas the advice of a physician by the patient's friends was of little importance. Oleszczyk in 2017 mentioned that the characteristics of patients and their physicians did not

significantly affect the satisfaction and experiences of patients in Polish primary care (26). However, our qualitative results showed that the FP'(F-code) and patients (P-code) characteristics in all interviews were influencing factors in patient satisfaction and FP selection. This finding revealed that patients' trust in their physician plays a central role in Iran's health system. The trust was also determined as a fundamental factor in the loyalty of French patients (27).

One of the most important factors in this study was sufficient time allocated by an FP to visit patients along with a detailed evaluation of medical history and clinical examination. This goal can be achieved if the workplace conditions and the number of referrals are well controlled. In other words, one of the essential pillars for achieving this purpose is allocating a reasonable number of referrals to each FP. On the other hand, being same gender or fellow-citizen or having access to a physician in our research is less important than other causes. Concerning the different cultural contexts in Iran's society, people are willing to accept difficult access times and gender differences but referred to the physician with their preferred priority.

In the present study, there was no difference in the preferences of patients with different education levels. But Aelbrecht reported that participants with lower education were more likely to favor aspects related to emotional issues, while people with college education paid more concerned with vocational skills issues (10). In this study, there was a difference in the views of Iranian men and women to choose the FP. For women, the physician's clear expression and the effective follow-up were critical, while for men, reasonable prescription of the test, and medication accompanying with medical services (such as equipped laboratory and pharmacy) was significant. This finding was affirmative to the result of Wolosin, who concluded that American women and men were more satisfied with physician-related items and the service delivery process, respectively (5). Street in 2014 found that people were less satisfied with primary care providers who were more likely to look at computers and be more conscientious in counseling. However, this fact was not mentioned by any of our interviewees (28).

Study Limitations And Strengths

Discrimination of our study from other surveys performed in the field of FP was the design of a 26-item questionnaire using a triangular method according to the population-based data obtained from qualitative evaluations. This design method resulted in effective factors being searched from different angles, and no points were ignored in the questionnaire. On the other hand, given that the FP program and referral system were not implemented in the Tehran metropolitan area, we had to provide verbal explanations about this program and the research aims while filling out questionnaires. Recording an abstract on top of the questionnaires along with giving oral descriptions, could significantly solve this problem, although it was a time-consuming and challenging task. Due to the nascent FP program, this study was limited to the factors influencing FP selection, whereas the most important factors affecting the change or departure of the FP were not examined. Also, it was impossible to exclude desirability bias as participated doctors might have chosen answers thought to be more desirable instead of closer

responses to their beliefs. The evaluation result of a broad range of factors showed that what was a top priority for people was ignored by health managers.

Conclusion

This study showed that people's priorities to select the FP were: having an FP specialty, conducting a detailed history examination, and assigning enough time to visit. The findings revealed the necessity of expanding this nascent medicine branch and the priority of recruiting graduates with high professional commitment in health centers. Also, there is a necessity for a more rigorous review of the program principles to encourage people to participate in this national initiative to promote public health. After this critical step, a serious need is felt to have a continuous evaluation and monitoring program for eliminating weakness points of the FP plan because generalizing this healthcare system has been initiated throughout cities of Iran.

Abbreviations

FP: family physician, FM: family medicine, GP: general practitioner, SD: specialist doctor, FMR: family medicine resident, EPHS: Essential Package of Health Services, HSM: health system manager, EQIs: experienced qualitative interviewers, IEP: internal expert panel, CVR: content validity ratio, CVI: content validity index,

Declarations

Ethics approval and consent to participate

All the participants were aware of the research team and used methodology before implementing the research plan. An oral and written informed consent was obtained for each voluntary participant. The study was entirely was consistent with the principles of the declaration of Helsinki and Nuremberg Code. This study was approved by the Ethics Committee of Tehran University of Medical Sciences, project approval number is IR.TUMS.MEDICINE.REC.1397.101.

Consent for publication

Not applicable

Availability of data and materials

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

Competing interests

The authors declare that they have no competing interests

References

1. Marmot M, Allen J, Bell R, Bloomer E, Goldblatt P. WHO European review of social determinants of health and the health divide. Lancet. 2012;380(9846):1011-1029.

2. Bradley EH, Canavan M, Rogan E, Talbert-Slagle K, Ndumele C, Taylor L, Curry LA. Variation in health outcomes: the role of spending on social services, public health, and health care, 2000-09. Health Aff. 2016;35(5):760-768.

3. Grytten J, Sørensen RJ. Patient choice and access to primary physician services in Norway. Health EconPolicy Law. 2009;4(1):11-27.

4. Polak R, Shani M, Dacey M, Tzuk-Onn A, Dagan I, Malatskey L. Family physicians prescribing lifestyle medicine: feasibility of a national training programme. Postgrad Med J. 2016;92(1088):312-317.

5. Wolosin RJ. The voice of the patient: a national, representative study of satisfaction with family physicians. Qual Manag Healthc. 2005;14(3):155-164.

6. Khedmati J, Davari M, Aarabi M, Soleymani F, Kebriaeezadeh A. Evaluation of urban and rural family physician program in Iran: A systematic review. Iran J Public Health. 2019;48(3):400-409.

7. Dixon A, Robertson R, Bal R. The experience of implementing choice at point of referral: a comparison of the Netherlands and England. Health Econ Policy and Law. 2010;5(3):295-317.

8. Baygi MZ, Seyedin H. Imbalance between goals and organizational structure in primary health care in Iran-a systematic review. Iran J Public Health. 2013;42(7):665-672.

9. Hatam N, Joulaei H, Kazemifar Y, Askarian M. Cost efficiency of the family physician plan in Fars province, southern Iran. Iran J Med Sci. 2012;37(4):253-259.

10. Aelbrecht K, Rimondini M, Bensing J, Moretti F, Willems S, Mazzi M, Fletcher I, Deveugele M. Quality of doctor–patient communication through the eyes of the patient: variation according to the patient's educational level. Adv Health Sci Educ. 2015;20(4):873-884.

11. Vrangbaek K, Robertson R, Winblad U, Van de Bovenkamp H, Dixon A. Choice policies in Northern European health systems. Health EconPolicy Law. 2012;7(1):47-71.

12. Shariati M. Dadgari A.Design, Application and Analysis of Qualitative Research in Health and Medical Sciences. Abasaleh (Hayan) Pub., Tehran, 2008.

13. Mosadeghrad AM, Joya T. Factors influencing patient choice of a medical consultant in Tehran. Razi J MedSci. 2017:62-72.

14. Arab M, Shafiee M, Iree M, Safari H, Habibi F, Akbari Sari A, Khabiri R. Surveying the attitude of family physicians working in healthcenters of Tehran University of Medical Sciences towards theirprofession using a qualitative approach. J Hospital. 2013;12 (3):19-28.

15. Torabi Ardakani A, Hosseini S, Oromiehie N, Mirzaei S. Study perception, knowledge and expectations from population and physicians' points of view about implementation of family physician program: a case study in Shiraz. JMed Counc Iran. 2015;33(2):147-155.

16. Kelishadi R, Majdzadeh R, Motlagh ME, Heshmat R, Aminaee T, Ardalan G, Esmaillzadeh A, Azadbakht L, Poursafa P, Movahedian M, Baraz S. Development and evaluation of a questionnaire for assessment of determinants of weight disorders among children and adolescents: the Caspian-IV study. Int JPrev Med. 2012;3(10):699-705.

17. Lawshe CH. A quantitative approach to content validity. Personnel Psychol. 1975;28(4):563-575.

18. Waltz C, Bausell BR. Nursing research: design statistics and computer analysis. Philadelphia: Davis FA; 1981.

19. Cook DA, Beckman TH. Current concepts in validityand reliability for psychometric instrument theory andapplication. Am J Med. 2006; 119:166.e7-e16.

20. Bland JM, Altman DG. Statistics notes: Cronbach's alpha. BMJ. 1997;314(7080):572.

21. Bornstein BH, Marcus D, Cassidy W. Choosing a doctor: an exploratory study of factors influencing patients' choice of a primary care doctor. J Eval Clin Pract. 2000;6(3), 255-262.

22. Grol R, Wensing M, Mainz J, Jung HP, Ferreira P, Hearnshaw H, Hjortdahl P, Olesen F, Reis S, Ribacke M, Szecsenyi J. Patients in Europe evaluate general practice care: an international comparison. Br J Gen Pract. 2000; 50:882-887.

23. NouronnesaR,Rezaeian S, Moradi S, Rezaeian Z. Patients' satisfaction from general physicians' services: a cross-sectional study. Med Ethics J. 2012;6(22):161-184.

24. Bachmann V, Völkner M, Bösner S, Donner-Banzhoff N. The experiences of Russian-speaking migrants in primary care consultations. Deutsches Ärzteblatt Int. 2014;111(51-52):871.

25. Salisbury CJ. How do people choose their doctor? BMJ. 1989;299(6699):608-610.

26. Oleszczyk M, Krztoń-Królewiecka A, Schäfer WL, Boerma WG, Windak A. Experiences of adult patients using primary care services in Poland–a cross-sectional study in QUALICOPC study framework. BMC Fam Pract. 2017;18(1):93.

27. Gérard L, François M, de Chefdebien M, Saint-Lary O, Jami A. The patient, the doctor, and the patient's loyalty: a qualitative study in French general practice. Br J Gen Pract. 2016;66(652):e810-e818.

28. Street Jr RL, Liu L, Farber NJ, Chen Y, Calvitti A, Zuest D, Gabuzda MT, Bell K, Gray B, Rick S, Ashfaq S. Provider interaction with the electronic health record: the effects on patient-centered communication in medical encounters. Patient Educ Couns. 2014;96(3):315-9.

Tables

Table 1. The most critical factors affecting selection in the literature review (familiarization stage)

Factor type	Criteria
Individual	Doctor's/Patient's age, gender, and ethnicity, Patient's education level, Patient confidence in physician performance, High communication skills with patients, The effectiveness of the physician's actions on the previous visit (Patients and their family members), and Type and severity of the disease
Behavioral-ethical	Punctuality, Confident and trustworthy, Responsibility, Doctor's sympathy, and Answering to patients' questions with patience
Professional and performance	Having high scientific level, Doctor's skill and expertise, Assigning sufficient time to visit patient, High carefulness in medical examination, Introducing and referring by other colleagues or specialists, Visiting patients privately, not in the presence of others, Providing the complete health services package, Presenting information on diagnostic, therapeutic and caring measures and providing appropriate solutions, and Avoiding any unnecessary referral
Locational, environmental and management	Proximity of doctor's office, Easy and convenient access to the doctor's office, Well-equipped and stylish workplace, Doctor's cleanness, Comfortable and large waiting room, Short waiting time, Scheduled visits without any delay, Using efficient assistants in healthcare centers, and Media and advertising (women were more influenced)
Economic	Diversity and low-cost of complementary health services, Doctor's visit price, And acceptance of health insurance
Sociocultural	Recommended by friends and acquaintances, Publicity, Patients' awareness level, and Treatment level based on the regional socioeconomic status

Table 2. A list of the main factors affecting the FP selection by patients from the perspective of people, HSMs, and physicians (familiarization stage)

Groups	Influential factors in patients' choice
People (n = 30)	Punctual, Careful examination, Being a specialist, Medical experience, Higher age (older), High scientific level, Explain and provide information to the patient, Listen and pay attention to patient talk, Advising the patient about his or her illness, Doctor's gender, Public or private workplace, Well-equipped and stylish workplace, Proximity of the doctor's office, The availability to the physician in more weekdays, Satisfaction of other patients, Having previous successful treatment experiences with the selected doctor, Correct diagnosis, Cost-effective examination, And proper behavior.
HSMs (n = 5)	Appropriate behavior and interaction with patients, High communication skills with patients, Listen patiently to patient talk, Having a good ethics and personality based on respect, Being kind, regular and punctual, Easy availability to the physician with short waiting time, Easy access to the doctor's office, The proximity of other health services (e.g., laboratories and pharmacy)to the doctor's office, Doctors' office cleaning and sanitary maintenance, Having a neat, clean-cut appearance, Looks like a doctor (by uniform, stethoscope, etc.), Being middle-aged and handsome, Having the common dialect and ethnicity (e.g., Fars, Turk, Kord, Lor, etc.) between doctor and patient, Being fellow-citizen, Being the same gender, Doctor's reputation, Being holistic (considering the patient's entire physical-mental condition along with her/his current illness), Being skillful and experienced, Having an excellent scientific level and clinical skills, High carefulness in medical examination and biography, Publicity, Give patients adequate information about diseases and necessary guidance or training, Being accountable to the patient, Keep patients focused during office visits, Follow up and continuity of care, The effectiveness of previous treatment, The patient's practical experience of physician actions, The trust level of patients in physicians, Cost-effective examination, Satisfaction and experiences of other patients, People's religious beliefs, Respecting the traditions and beliefs of patients, People's literacy and awareness level, And the disease severity (making the patient more careful and obsessed in choosing a physician)
FMRs (n = 20)	Physician knowledge and awareness, The treatment effectiveness, Good ethics (patience, politeness, behavior and communication), Keeping the patient's medical secrets, Proximity to the doctor's office, Cost-effective examination, Complementary services at the center to avoid any unnecessary referral of patients for conducting paraclinical or interventional measures, Getting to know the cultural beliefs of the people of the region, Knowing the level of scientific literacy of the regional people' children who are studying and working in another city, Enough awareness of religious beliefs of the regional people, Awareness of the level of public expectations of the area physician's performance, Required ability to adequately treat patients and not refer them too much for diagnostic trials, And providing a suitable alternative in times of drug shortage or lack of laboratory facilities

Table 2. Continued

Groups	Influential factors in patients' choice
GPs (Rural FPs) (n = 6)	Gender (Women often refer to a female doctor), Being a specialist, High medical experience, Having good ethics and personality based on respect, Effective communication and empathy with the patient, Follow up and continuity of care, Other patients' satisfaction with the treatment outcome, The effectiveness of previous treatment, Presenting the correct diagnosis and rapid treatment, Keeping up to date on scientific information, Give patients adequate information about their diseases, Presenting the necessary training to prevent patient's illness complications, The referral to the physician who complies with patient requests, Government-funded healthcare centers (with more referrals due to the less payment), And doctors occupied in the private sector (owing to their better care and higher scientific level)
GPs (Urban FPs) (n = 6)	Having good behavior and ethics based on respect, Being patient and trusted, Having up-to-date knowledge and high scientific level, Keeping the patient's medical secrets, Having the effective communication and empathy with the patient, Avoiding unnecessary referral of patients for conducting paraclinical and interventional tests, Correct and necessary referral of patients to other medical centers, Do not be a strict physician, The availability to the physician in most weekdays, High availability to additional services (e.g., sterile injection) in the nearness of physician's office, Proximity to the doctor's office, Short waiting time to visit, Regular follow-up and responsibility, Assigning sufficient time to visit, Work experience and reputation, The effectiveness of previous treatment, And satisfaction and experiences of other family members,
SDs (n = 15)	Good morals, Doctor's gender, Punctuality, Honesty, Being holistic, High communication skills with patients and favorable answering to their questions with patience, Proper professional behavior, Avoiding any unnecessary referral, Having up-to-date knowledge and high scientific level, Doctor's reputation, skill and expertise, Proximity of doctor's office, Low doctor's visit price and acceptance of health insurance, Good secretary, Recommended by friends and acquaintances, Geographical location of doctor's office, Having the required information (office's phone, and doctor's mobile), The effectiveness of the physician's actions on the previous visit(s), Satisfaction and experiences of other patients, Keeping the patient's medical secrets, Having a neat, clean-cut appearance, High carefulness in medical examination and biography, Assigning sufficient time to visit patient

Table 3. Definitions and identifying a thematic framework in the qualitative study

Code no.	Theme	Sub-theme	Code definition
1	F	F1	Ethics factors
		F2	Individual factors
		F3	Professional and performance factor
2	P	P1	Underlying disease and individual health factors
		P2	Disease-related factors
3	C	C1	Location factors
		C2	Management factors
4	D	D	Diplomacy factors
5	E	E	Economic factors
6	S	S	Social factors

F: Family physician, P: Patient, C: Clinic, D: Diplomacy, E: Economic, S: Social

Table 4. Charting stage of framework from the viewpoints of HSMs and physicians

Code [a]	HSMs sub-groups					Percent (%)
	M1	M2	M3	M4	M5	
F1-M	■[b]	■	■	■	■	100
F2-M		■	■	■	■	80
F3-M	■	■	■	■	■	100
P1-M				■		20
P2-M	■	■	■	■	■	100
C1-M	■	■	■	■		80
C2-M		■	■			40
D-M			■	■		40
E-M	■		■	■		60
S-M	■	■		■	■	80

Code [a]	Physician sub-groups				Percent (%)
	G1 (Rural FPs)	G2 (Urban FPs)	G3 (SDs)	G4 (FMRs)	
F1-G	□	□	□	□	100
F2-G	□	□	□	□	100
F3-G	□	□	□	□	100
P1-G					0
P2-G	□	□	□	□	100
C1-G		□	□	□	75
C2-G		□	□	□	75
D-G					0
E-G	□		□	□	75
S-G	□	□	□	□	100

[a]M and G show the interviewee number in HSMs and physicians, respectively (for example, M1 shows HSM no. 1, G5 reveals physician no. 5 for rural and urban FP, or SD, or FMR).

[b]F1M1 code explains ethics factors mentioned by HSM no. 1.

Table 5. Demographic data of the subjects who participated in the quantitative phase

Variable	Data [a]	
	Frequency (n)	Percentage (%)
Gender		
Man	117	29.25
Woman	283	70.75
Marriage status		
Married	319	79.75
Single	81	20.25
Educational level		
Illiterate	18	4.5
Under diploma	94	23.5
Diploma	214	53.5
Bachelor	61	15.25
Master and above	13	3.25
Health insurance status		
Yes	342	85.5
No	58	14.5

[a] The total number of participants (N_{total}) was 400.

Table 6. Ranking of the most important factors influencing FP selection based on the results of the designed questionnaire filled by the entire population

Overall ranking in the total population	Ranking in the women's population	Ranking in the men's population
Being a specialist	- Being a specialist	- Being a specialist
Careful examination with receiving a detailed medical history	- Careful examination with receiving a detailed medical history	- Careful examination with receiving a detailed medical history
Sufficient time assigned to visit	- Sufficient time assigned to visit	- Rational prescription of drugs and medical tests
Physicians' intelligible expression	- Physicians' intelligible expression	- Providing services other than visit like injection, ...
Providing services other than visit like injection, ...	- Regular follow-up of patients' illness	- Sufficient time assigned to visit
Rational prescription of drugs and tests	- Health and illness status	- Physicians' intelligible and clear expression
Health and illness status	- Providing services other than visit like injection, ...	- Health and illness status
Regular follow-up of patients' illness	- Rational prescription of drugs and tests	- High trust in the doctor
High trust in the doctor	- Good morals and behavior	- Keeping the patient's medical secrets
Attention to other aspects of health	- High trust in the doctor	- Attention to other aspects of health
Keeping the patient's medical secrets	- Attention to other aspects of health	- Regular follow-up of patients' illness
Good morals and behavior	- Keeping the patient's medical secrets	- Well-equipped and stylish doctor's office
Proximity to the doctor's office	- Proximity to the doctor's office	-Proximity to the doctor's office
Kindness and empathy with the patient	- Kindness and empathy with the patient	-Kindness and empathy with the patient
The receptionist's or secretary's behavior	- Waiting time to the doctor's visit	- The receptionist's or secretary's behavior
Well-equipped and stylish doctor's office	- The receptionist's or secretary's behavior	- Satisfaction of other patients
Waiting time to the doctor's visit	- Well-equipped and stylish doctor's office	- Good morals and behavior
Satisfaction of other patients	- Satisfaction of other patients	- Doctor's reputation
Doctor's reputation	- Doctor's age and experience	- Waiting time to the doctor's visit
Doctor's age and experience	- Doctor's reputation	- Doctor's age and experience
Recommendation of health care workers	- Recommendation of health care workers	- Recommendation of health care workers
More time accessibility to the doctor	- More time accessibility to the doctor	- More time accessibility to the doctor
Suggestion by friends and acquaintances	- Suggestion by friends and acquaintances	- Physician's appearance
Physician's appearance	- Physician's appearance	- Suggestion by friends and acquaintances
Being same gender	- Being same gender	- Being same gender
Being a fellow-citizen	- Being a fellow-citizen	- Being a fellow-citizen

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- COREQ32items.docx