Patients’ Willingness on Community Health Centers as Gatekeepers and Associated Factors in Shenzhen, China

A Cross-sectional Study

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Abstract: The gate-keeping function of primary healthcare facilities has not been fully implemented in China. This study was aiming at assessing the willingness on community health centers (CHCs) as gatekeepers among a sample of patients and investigating the influencing factors.

A cross-sectional survey was conducted in 2013. A total of 7761 patients aged 18 to 90 years from 8 CHCs in Shenzhen (China) were interviewed using a structured questionnaire. Descriptive and multivariable logistic regression analyses were used to analyze the characteristics of patients, their willingness on the gatekeeper policy, and identify the associated factors.

On willingness of patients to select CHCs as gatekeepers, 70.03% of respondents were willing, 18.95% were neutral, and 9.02% were unwilling. Multivariable analysis indicated that female patients (odds ratio [OR] = 1.15, 95% confidence interval [CI]: 1.02–1.30); patients with health insurance (OR = 1.21, 95% CI: 1.07–1.36); patients who lives near CHC (OR = 1.89, 95% CI: 1.17–3.05); and patients who were more familiar with the gatekeeper policy (OR = 2.09, 95% CI: 1.85–2.36), had higher level of willingness on the policy. Conversely, reporting with good health status was independently associated with the decreased willingness on gatekeeper policy (OR = 0.69, 95% CI: 0.53–0.90).

The findings indicated that patients’ willingness on CHCs as gatekeepers is high. More priority measures, such as expanding medical insurance coverage of patients, strengthening the propaganda of gatekeeper policy, and increasing the access to community health service, are warranted to be taken. This will help to further improve the patients’ willingness on CHCs as gatekeepers. It is thus feasible to implement the gatekeeper policy among patients in China.

INTRODUCTION

The healthcare reform has been explored and investigated for many years in China. The latest round of nationwide systemic reform was launched in 2009, in which the importance of grading health care system was identified.

The gatekeeper policy, the central part of grading medical care, played a key role in setting up a well-structured and rationally functional healthcare delivery system, promoting appropriate use of health resources and managing the inappropriate increase of healthcare expenditures. The gatekeeper policy has been widely established in many western countries, such as Germany, Spain, the United Kingdom, and the Netherlands. In the last 5 years, China’s healthcare reform has made substantial progress in expansion of the insurance coverage, and strengthening of the infrastructure of primary healthcare facilities. However, much effort is needed to improve the healthcare system. Specially, primary healthcare facilities have been unable to act as the gatekeepers in their functions and roles. The lack of the gatekeeper policy has become the greatest obstacle to the development of community health services (CHS). The unreasonable allocation of health resources, ambiguity of medical service, and the barriers to referrals between primary health institutions, secondary, and tertiary hospitals have been identified as challenges in China. The patients’ feeling and complaint of “too difficult and too expensive to see a doctor,” one of the key public policy issues, still exists.

Shenzhen was the first pilot city that initiated the gatekeeper policy, targeting migrant workers since 2006. However, the gatekeeper policy for the entire population or people with health insurance remains unestablished. Because the government worried about the patients’ willingness was low. Additionally, some developing countries also faced some difficulties to promote the gatekeeper policy. The same was faced by some developed countries in west in the last century. To promote the gatekeeper policy to the entire population, it was thus very essential to know the willingness of patients and necessary to identify the associated factors. The study aimed at
characterizing demographic profiles of patients and identifying associated indicators determining the willingness of patients to accept the gatekeeper policy in a large-scale cross-sectional study in China. In light of Chinese healthcare reform, this study would not only inform policy makers about priority areas to promote the implementation and spreading of the gatekeeper policy in China, but also provide the valuable reference for other developing countries.

METHODS

Ethics Statement

The study protocol was approved by the institutional review board of Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China. All participants read a statement that explained the purpose of the survey and were provided with written consent form before participating in the study.

Data Sources and Sampling

The cross-sectional study was conducted between May 1, 2013 and July 28, 2013 in Bao’an district of Shenzhen, which is located in Guangdong Province (Southern China). A multistage random sampling method was performed in the study. First, 4 streets from Bao’an District were selected randomly. Second, 2 CHCs were randomly selected from every street. Third, 1000 outpatients from each CHC were randomly interviewed through self-administered anonymous questionnaires at the exit of the CHCs. All interviewers received adequate training to ensure the reliability of the survey.

Initially, 8000 patients were targeted at be recruited in the survey, of whom 80 (1%) refused to participate in the study. Additionally, 9 questionnaires were discarded because of a lot of missing data and logical error. Finally, 7911 eligible questionnaires remained, of which 7761 participants aged 18 years or older were included in the analysis.

Questionnaire Design and Content

Owing to the unavailability of validated questionnaires for this study, we designed a questionnaire based on literature review, group discussions, and mock interviews. Furthermore we conducted a pilot study at one of the CHCs to improve the quality of the questionnaire. The questionnaire included 3 parts: sociodemographic information, health status and health-seeking behavior, and awareness of the gatekeeper policy.

Measures

The dependent variable was the attitude of patients to the gatekeeper policy. The willingness on CHCs as gatekeepers was evaluated with 1 item (“Were you willing to consult the doctor initially at the CHC when you were sick, and if necessary, would be referred to the secondary or tertiary hospital by primary care physician.”). The question was closed-ended with 3 response options (agree, neutral, disagree). The independent variables covered sociodemographics characteristics (sex, age), socioeconomic status (education level), work status, and household monthly income per capita, health insurance status, self-reported health status, history of chronic diseases, frequency of CHS utilization over the past year, types of CHS utilization, the close medical institution in your living area, and familiarity with the gatekeeper policy. χ² tests were conducted to compare the acceptance of gatekeeper policy among different groups. Multivariable logistic regression analysis was used to calculate the odds ratios (ORs) and 95% confidence interval (CI) for factors that might be associated with the willingness of the gatekeeper policy, including neutral or disagreement attitude as the reference category. We used the stepwise selection method to select variables that were associated with patients’ willingness towards gatekeeper policy (level for selection and elimination: $P=0.05$ and $P=0.10$, respectively). In the multivariable model, independent variables included: age (18–45, 46–60, > 60 years), sex (female and male), marital status (single, widowed, divorced, married), education level (primary, junior, senior, college), working status (unemployment, employment, retire, other), household monthly income per capita (< 1521¥, 1521¥–3041¥, 3042¥–6084¥, 6084+¥), health insurance (yes, no), self-perceived health status (good, fair, bad), history of chronic disease (yes, no), frequency of CHS utilization (1–2, 3–5, 6+ times a year) in the past year, types of CHS utilization (medical services, public health services), the close medical institution in their living area (private clinic or other, CHC, hospital), and the familiarity with gatekeeper policy (yes, no). All statistical analyses were performed using Statistical Package for Social Sciences (Version 13.0, SPSS Inc, Chicago, III), and all tests were 2-sided with a significance level of 0.05 except where otherwise specified.

RESULTS

The main characteristics of participants were reported in Table 1. A total of 7,761 participants (4,568 females, 59.05%) were investigated in this study. The age of the participants ranged from 18 to 90 years (mean age of 29.96 and standard deviation (SD) of 8.82). There were 58.63% of the participants who attended junior middle school or below. Most of the participants (63.70%) were from low and middle income groups. More than half of the participants (53.79%) were from low-income line for Shenzhen in 2012 classified in 4 categories: < 1521¥ (low-income group), 1521¥–3041¥ (low- and middle-income group), 3042¥–6084¥ (middle- and high-income group), 6084+¥ (high-income group) respectively. Additionally, the type of CHS utilization was categorized into 2 groups: medical services (including disease diagnosis and treatment, purchasing medicines, and rehabilitation) and public health services (including health check, preventive care, and health education).

Statistical Analysis

Descriptive analysis was conducted for sociodemographics characteristics, socioeconomic factors, physical health status, history of chronic diseases, frequency of CHS utilization, types of CHS utilization, the close medical institution in your living area, and familiarity with the gatekeeper policy, χ² tests were conducted to compare the acceptance of gatekeeper policy among different groups. Multivariable logistic regression analysis was used to calculate the odds ratios (ORs) and 95% confidence interval (CI) for factors that might be associated with the willingness of the gatekeeper policy, including neutral or disagreement attitude as the reference category. We used the stepwise selection method to select variables that were associated with patients’ willingness towards gatekeeper policy (level for selection and elimination: $P=0.05$ and $P=0.10$, respectively). In the multivariable model, independent variables included: age (18–45, 46–60, > 60 years), sex (female and male), marital status (single, widowed, divorced, married), education level (primary, junior, senior, college), working status (unemployment, employment, retire, other), household monthly income per capita (< 1521¥, 1521¥–3041¥, 3042¥–6084¥, 6084+¥), health insurance (yes, no), self-perceived health status (good, fair, bad), history of chronic disease (yes, no), frequency of CHS utilization (1–2, 3–5, 6+ times a year) in the past year, types of CHS utilization (medical services, public health services), the close medical institution in their living area (private clinic or other, CHC, hospital), and the familiarity with gatekeeper policy (yes, no). All statistical analyses were performed using Statistical Package for Social Sciences (Version 13.0, SPSS Inc, Chicago, III), and all tests were 2-sided with a significance level of 0.05 except where otherwise specified.
TABLE 1. Characteristics of the Study Population

| Characteristics                                      | N     | %    |
|------------------------------------------------------|-------|------|
| Total                                                | 7761  | 100  |
| Age, y                                               |       |      |
| 18~                                                  | 7251  | 93.43|
| 45~                                                  | 455   | 5.86 |
| 60~                                                  | 55    | 0.71 |
| Sex                                                  |       |      |
| Male                                                 | 3168  | 40.95|
| Female                                               | 4568  | 59.05|
| Education                                            |       |      |
| Primary school or below                              | 569   | 7.45 |
| Junior middle school                                 | 3910  | 51.18|
| Senior middle school                                 | 2543  | 33.29|
| College degree or above                              | 618   | 8.09 |
| Marital status                                       |       |      |
| Unmarried/widow/divorced                             | 2446  | 32.41|
| Married                                              | 5102  | 67.59|
| Working status                                       |       |      |
| Unemployment                                         | 248   | 3.39 |
| Employment                                           | 5969  | 81.70|
| Retire                                               | 24    | 0.33 |
| Other (student, housewife, etc)                      | 1065  | 14.58|
| Household income per capita (¥)                      |       |      |
| <1521                                                | 1478  | 19.04|
| 1521~3042                                           | 3466  | 44.66|
| 3042~6084                                           | 2136  | 27.52|
| 6084+                                                | 681   | 8.77 |
| Health insurance                                     |       |      |
| No                                                   | 3539  | 46.21|
| Yes                                                  | 4119  | 53.79|
| Self-perceived health status                         |       |      |
| Good                                                 | 3164  | 41.42|
| fair                                                 | 3991  | 52.25|
| Bad                                                  | 484   | 6.34 |
| Chronic disease                                      |       |      |
| Yes                                                   | 1266  | 17.57|
| No                                                   | 5939  | 82.43|
| Frequency of CHS utilization, times/y                 |       |      |
| 1~2                                                  | 3980  | 51.28|
| 3~5                                                  | 2167  | 27.92|
| 6+                                                   | 1614  | 20.80|
| Utilized types of the CHS                            |       |      |
| Medical services                                     | 6514  | 92.58|
| Public health services                               | 522   | 7.42 |
| The close medical institution in your living area     |       |      |
| Private clinic/other                                 | 1724  | 22.96|
| CHC                                                  | 5693  | 75.82|
| Hospital                                             | 92    | 1.23 |
| Familiarity with the gatekeeper policy                |       |      |
| Yes                                                   | 3703  | 48.24|
| No                                                   | 3973  | 51.76|

CHC = community health center, CHS = community health service.

Pearson $\chi^2$ tests were used to assess the associations between characteristics of study population and willingness of participants toward the gatekeeper policy. The results are shown in Table 2. Overall, 72.03% of participants stated that they were willing to consult a doctor initially at CHCs when they were sick, and if necessary, they would get the referrals. There were significant differences in patients’ willingness of CHCs as gatekeepers in terms of age, sex, education level, working status, household monthly income per capita, health insurance, self-perceived health status, types of CHS utilization, the close medical institution in their living area, and familiarity with the gatekeeper policy ($P < 0.05$) (Table 2). Additionally, when we investigated the reasons for patients’ disagreement with the gatekeeper policy; restricting the freedom of seeking medical services and having difficulties in the referral processes were the 2 main reasons (Table 3).

The factors associated with participants’ willingness were shown in Table 4. The results show that compared with males, females were more likely to agree on consulting the doctor first at CHC (OR = 1.15, 95% CI 1.02–1.30) when sick. Notably, the self-perceived health status was inversely associated with the participants’ willingness, and participants with good self-perceived health status were less willing to select CHCs as gatekeepers (OR = 0.69, 95% CI 0.53–0.90).

The association between health insurance and the willingness of gatekeeper policy was statistically significant. Participants with health insurance were more likely to accept the gatekeeper policy (OR = 1.21, 95% CI 1.07–1.36). In addition, participants with familiarity with the gatekeeper policy were more willing to select CHCs as gatekeepers (OR = 2.09, 95% CI 1.85–2.36). Finally, the nearest medical facilities from the patients living area was an important factor for the willingness of first-contact care. The participants who lived near by the CHCs were more likely to accept the gatekeeper policy than those who living near by the hospitals (OR = 1.89, 95% CI 1.17–3.05).

**DISCUSSION**

This study investigated the willingness of gatekeeper policy and relevant determinants among patients in China, indicating that a majority of patients (72.03%) were willing to accept the gatekeeper policy, which showed that the CHS were highly acceptable by the public. The finding was much higher than previous studies conducted in other cities in China.16–19 The willingness on CHCs as gatekeeper ranged from 40.0% to 95.5% in Israel,20 Germany,21 the United States,22 Canada,23 and the Netherlands.24 The differences might result from the participants’ characteristics including age, sex, socio-economic status, geographic regions, and sample size. Another possible explanation to this difference was that the gatekeeper policy for migrant workers was implemented in Shenzhen, which might promote the acceptance of patients to some extent. The findings also showed that restricting the freedom of seeking medical services and having difficulties in the referral processes were the 2 main reasons for participants to refuse the gatekeeper policy, which needed to raise the attention to promote the gatekeeper policy from those health policy makers. Additionally, on basis of the findings, we also suggest that optimizing the referral procedures and strengthening the care coordination between primary health care (PHC) facilities, secondary, and tertiary healthcare hospitals were also an important step to develop the China’s 3-tier health system. The findings provided the crucial policy implications for the health and social security departments to determine the gatekeeper policy.

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In this study, we obtained 2 important and interesting findings. First, the proportion of female visitors of CHCs was 59.05%, which was much higher than male. It identified that females were more likely to visit the CHCs when they needed health care services than males. These similar findings were reported in China (56.07%)\textsuperscript{23} and other countries such as UK (64.08%),\textsuperscript{24} Spain (53.20%),\textsuperscript{25} Australia (51.80%),\textsuperscript{27} South Africa (66.60%),\textsuperscript{28} and Canada (65.00%).\textsuperscript{29} More importantly,
the multivariable analyses indicated that sex was a significant indicator for the willingness to accept the gatekeeper policy among patients, and women were more likely to accept the gatekeeper policy. One possible explanation was that compared with male, female lived longer. However, paradoxically women reported greater morbidity and disability and made greater utilization of health care services. Another interpretation was that the different social construction of the disease (such as roles, beliefs, attitudes, and behaviors of females and males when they got sick or worried about the ill-health), which contributed to the different processes for seeking health care. In addition, women were more likely to seek the health services in PHC institutions because of low socioeconomic status. Second, the proportion of low- and middle-income groups was 63.70%. This study indicated that they were more likely to utilize the health care services. These results showed that the CHS might have important effect on provision of PHC services to meet the demands of vulnerable populations (eg, females and low-income groups). Additionally, the findings showed that CHCs of Shenzhen played an important role in promoting equity in health service utilization. In this regard, the results have shown that it was the right strategy for World Health Organization (WHO) in adopting primary healthcare to resolve the health care use for vulnerable populations.

There are significant association between medical insurance and the willingness of the gatekeeper policy among patients. The study showed that the participants with medical insurance were more likely to increase the probability of seeking care at CHC. The finding was consistent with previous studies. As such, it was thus necessary to make efforts to extend the medical insurance coverage, which would help to promote the gatekeeper policy. The findings raised an idea of combining initial consultations at CHC and medical insurance to ensure that general practitioners (GPs) serve as “gatekeepers” and patients are practically referred in to the health-care system.

The nearest medical facility of the patients’ living area was also an important predictor for the willingness of the gatekeeper policy. The participants who lived near CHC were more likely to accept the policy. In this study, 75.82% of participants reporting living near CHCs and were more frequent users of the CHS. In this study, distance to CHS was an important aspect in the availability of CHS. Therefore, the health department and related researchers should ensure that CHCs were strategically placed to guarantee the convenience in access to CHS to promote the gatekeeper policy.

In addition, this study indicated that participants with higher level of familiarity with the gatekeeper policy were more likely to accept the policy, which was consistent with previous study. It suggested that health administrators and other related departments should pay attention to strengthen the propaganda of the gatekeeper policy. Consequently, more announcements of the advantages, characteristics and the functions of CHCs would improve the public perception of CHS, which would be further favorable to improve the preference of the policy.

To the best of our knowledge, to date, this study is the largest cross-sectional study investigating the willingness of gatekeeper policy and relevant determinants among the patients in China. The large sample size significantly increased statistical power to detect social determinates of willingness of the gatekeeper policy. However, the generalizability of our data to other populations in China, particularly the elderly, other racial groups, and other poor regions, may be limited. In addition, all information was collected from a self-reported questionnaire and the response bias was therefore unavoidable. Finally, some other factors, such as the medical fees, relationship with doctors, waiting time, and satisfaction of participants were not considered, which might also be significant determinants of carrying out the gatekeeper policy of CHS.

**CONCLUSION**

Since the Chinese government worried that the patients’ willingness was low, the gatekeeper policy was not performed

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**TABLE 3. Distribution According to the Reasons for Disagreement With Gatekeeper Policy Among Patients (N = 681)**

| Items                                      | N   | %  |
|--------------------------------------------|-----|----|
| Restricting the freedom of seeking medical services | 300 | 44.05 |
| Lacking confidence in the service quality of primary care physicians | 64  | 9.40 |
| Lacking drugs varieties                    | 154 | 22.61 |
| Lacking the advanced equipment             | 196 | 28.78 |
| Having difficulties in referral process     | 231 | 33.92 |
| Lacking of medical services                | 211 | 30.98 |
| Others                                     | 18  | 2.64 |

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**TABLE 4. Logistic Regression Analysis for the Association With the Willingness of the Gatekeeper Policy Among Patients (N = 7546)**

| Variables                                      | OR (95% CI) | P    |
|------------------------------------------------|-------------|------|
| Age, y                                         |             |      |
| 18~                                            | 1.00 (ref)  |      |
| 45~                                            | 0.91 (0.72–1.17) | 0.13 |
| 60~                                            | 0.46 (0.26–0.84) | 0.02 |
| Sex                                            |             |      |
| Male                                           | 1.00 (ref)  |      |
| Female                                         | 1.15 (1.02–1.30) | 0.02 |
| Familiarity with the gatekeeper policy         |             |      |
| No                                             | 1.00 (ref)  |      |
| Yes                                            | 2.09 (1.85–2.36) | <0.001 |
| Self-perceived health status                   |             |      |
| Bad                                            | 1.00 (ref)  |      |
| Fair                                           | 0.88 (0.68–1.14) | 0.47 |
| Good                                           | 0.69 (0.53–0.90) | <0.001 |
| Health insurance                               |             |      |
| No                                             | 1.00 (ref)  |      |
| Yes                                            | 1.21 (1.07–1.36) | 0.002 |
| The close medical institution in your living area |         |      |
| Hospital                                       | 1.00 (ref)  |      |
| Private clinic/other                           | 1.74 (1.07–2.83) | 0.03 |
| CHC                                            | 1.89 (1.17–3.05) | 0.01 |

CI = confidence interval, CHC = community health center, OR = odds ratio.
in China. Intriguingly, this study shows that the willingness is high among patients reported with health insurance, who were female, and who were familiar with gatekeeper policy. These findings remind the healthcare sector about the need to formulate more priority strategies for promoting the implementation of the gatekeeper policy in China.

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