

OPEN

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

A Cross-sectional Study

Yong Gan, PhD, Wenzhen Li, PhD, Shiyi Cao, PhD, Xiaoxin Dong, PhD, Liqing Li, PhD, Naomie Mkandawire, MS, Yawen Chen, MS, Chulani Herath, PhD, Xingyue Song, MPH, Xiaoxv Yin, PhD, Tingting Yang, MS, Jing Li, MS, Jian Deng, MPH, and Zuxun Lu, PhD

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.

(*Medicine* 95(14):e3261)

Abbreviations: CHC = community health center, CHS = community health service, GP = general practitioner, OR = odds ratio, PHC = primary health care, WHO = World Health Organization.

INTRODUCTION

The healthcare reform has been explored and investigated for many years in China. The latest round of nationwide systemic reform was launched in 2009,¹ 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.^{2–5} The gatekeeper policy has been widely established in many western countries, such as Germany,^{6,7} Spain,⁸ the United Kingdom,^{9,10} and the Netherlands.^{11,12} 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.¹³ 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.^{13,14} 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

Editor: Mirko Manchia.

Received: October 16, 2015; revised: January 19, 2016; accepted: March 4, 2016.

From the Department of Social Medicine and Health Management, School of Public Health, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, Hubei (YG, WL, SC, XD, LL, NM, YC, CH, XY, XS, TY, JL, ZL); Department of Management, School of Economics and Management, Jiangxi Science and Technology Normal University, Nanchang, Jiangxi (LL); and Center of Community Health Service Management, Fuyong People's Hospital, Shenzhen, Guangdong, China (JD).

Correspondence: Professor Zuxun Lu, Department of Social Medicine and Health Management, School of Public Health, Tongji Medical College, Huazhong University of Science and Technology, No. 13 Hangkong Road, Wuhan 430030, China (e-mail: zuxunlu@yahoo.com).

YG and WL contributed equally to this work.

This study was supported by Natural Science Foundation of China (NSFC, 71373090, "Study on the gatekeeper policy of community health service"). The funders had no role in study design, data collection and analysis, decision to publish or preparation of the manuscript.

The authors report no conflicts of interest.

Copyright © 2016 Wolters Kluwer Health, Inc. All rights reserved. This is an open access article distributed under the Creative Commons Attribution-NonCommercial-NoDerivatives License 4.0, where it is permissible to download, share and reproduce the work in any medium, provided it is properly cited. The work cannot be changed in any way or used commercially.

ISSN: 0025-7974

DOI: 10.1097/MD.00000000000003261

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 to 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 for this visit, the close medical institution in living area, and the familiarity with gatekeeper policy. Fifty percent of the average income was often assigned as the low-income line for the country or region internationally.¹⁵ However, in this study

household monthly income per capita was estimated by 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. χ^2 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~, 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¥–6083¥, 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 by using Statistical Package for Social Sciences (Version 13.0, SPSS Inc, Chicago, Ill), 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)=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 covered by health insurance plan. The 41.42% of participants reported to have a good self-perceived physical health status. On all the participants, the utilization of CHS was measured according to the frequency of CHS visits in the past year. The median of CHS visits was 2 times and the proportion of participants who had more than 6 times visits was 20.80%. The participants (92.58%) mostly utilized the medical services. The majority of respondents (75.82%) reported that the close medical institution in their living area was CHC, and more than half of respondents were unfamiliar with the gatekeeper policy (51.76%).

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 χ^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,⁷ the United States,²¹ Canada,²² and the Netherlands.⁶ 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. Needless to say, conducting the reasonable idea of seeking care and emphasizing the value of primary care for the residents was a crucial strategy to improve the recognition for the gatekeeper policy. 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.

TABLE 2. Factors Associated With the Acceptance of the Gatekeeper Policy Among Patients

Variables	Number in Agreement (%)	Number in Neutral (%)	Number in Disagreement (%)	P
Total	5435 (72.03)	1430 (18.95)	681 (9.02)	
Age, y				
18~	5094 (93.73)	1312 (91.75)	643 (94.42)	0.01
45~	310 (5.70)	101 (7.06)	32 (4.70)	
60~	31 (0.57)	17 (1.19)	6 (0.88)	
Sex				
Male	2173 (40.13)	623 (43.69)	294 (43.24)	0.03
Female	3242 (59.87)	803 (56.31)	386 (56.76)	
Education				
Primary school or below	356 (6.65)	143 (10.18)	41 (6.11)	<0.001
Junior middle school	2725 (50.90)	766 (54.52)	319 (47.54)	
Senior middle school	1834 (34.25)	408 (29.04)	226 (33.68)	
College degree or above	439 (8.20)	88 (6.26)	85 (12.67)	
Marital status				
Unmarried/widow/divorced	1744 (32.89)	432 (31.30)	208 (31.47)	0.45
Married	3558 (67.11)	948 (68.70)	453 (68.53)	
Working status				
Unemployment	168 (3.27)	53 (3.94)	18 (2.81)	0.02
Employment	4222 (82.30)	1097 (81.56)	496 (77.38)	
Retire	17 (0.33)	4 (0.30)	3 (0.47)	
Other (student, housewife, etc)	723 (14.09)	191 (14.20)	124 (19.34)	
Household income per capita (¥)				
<1521	999 (18.38)	350 (24.48)	94 (13.80)	0.0002
1521~3042	2444 (44.97)	597 (41.75)	318 (46.70)	
3042~6084	1511 (27.80)	354 (24.76)	211 (30.98)	
6084+	481 (8.85)	129 (9.02)	58 (8.52)	
Chronic disease				
Yes	888 (17.59)	220 (16.42)	120 (18.90)	0.37
No	4159 (82.41)	1120 (83.58)	515 (81.10)	
Frequency of CHS utilization, times/y				
1-2	2784 (51.22)	756 (52.87)	337 (49.49)	0.38
3-5	1555 (28.61)	390 (27.27)	169 (24.82)	
6+	1096 (20.17)	284 (19.86)	175 (25.70)	
Utilized types of the CHS				
Medical services	4555 (92.28)	1222 (94.29)	567 (90.87)	0.01
Public health services	381 (7.72)	74 (5.71)	57 (9.13)	
Familiarity with the gatekeeper policy				
Yes	2862 (53.07)	454 (31.86)	297 (44.13)	<0.0001
No	2531 (46.93)	971 (68.14)	376 (55.87)	
Self-perceived health status				
Good	2128 (39.81)	647 (45.72)	305 (45.45)	<0.0001
Fair	2860 (53.50)	688 (48.62)	327 (48.73)	
Bad	358 (6.70)	80 (5.65)	39 (5.81)	
Health insurance				
No	2419 (45.03)	734 (52.24)	306 (45.54)	<0.0001
Yes	2953 (54.97)	671 (47.76)	366 (54.46)	
The close medical institution in your living area				
Private clinic/Other	1197 (22.72)	358 (25.81)	129 (19.49)	0.001
CHC	4016 (76.23)	1005 (72.46)	520 (78.55)	
Hospital	55 (1.04)	24 (1.73)	13 (1.96)	

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

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%)²³ and other countries such as UK (64.08%),²⁴ Spain (53.20%),²⁵ Australia (51.80%),²⁷ South Africa (66.60%),²⁸ and Canada (65.00%).²⁹ More importantly,

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

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.^{30–33} 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

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.

care.^{26,30,33} In addition, women were more likely to seek the health services in PHC institutions because of low socioeconomic status.³⁴ 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.^{35,36} 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.^{37,38}

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.¹⁶ 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

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.

ACKNOWLEDGEMENTS

The authors thank the Health Bureau of Bao'an district and community health centers for participating in the study. The authors also thank all study participants who have been involved and contributed to the procedure of data collection.

REFERENCES

- Chen Z. Launch of the health-care reform plan in China. *Lancet*. 2009;373:1322–1324.
- Velasco Garrido M, Zentner A, Busse R. The effects of gatekeeping: a systematic review of the literature. *Scand J Prim Health Care*. 2011;29:28–38.
- Kravitz RL. Beyond gatekeeping: enlisting patients as agents for quality and cost-containment. *J Gen Intern Med*. 2008;23:1722–1723.
- Starfield B, Powe NR, Weiner JR, et al. Costs vs quality in different types of primary care settings. *JAMA*. 1994;272:1903–1908.
- Zentner A, Velasco Garrido M, Busse R. Do primary care physicians acting as gatekeepers really improve health outcomes and decrease costs? A systematic review of the concept gatekeeping. *Gesundheitswesen*. 2010;72:e38–e44.
- Linden M, Gothe H, Ormel J. Pathways to care and psychological problems of general practice patients in a “gate keeper” and an “open access” health care system: a comparison of Germany and the Netherlands. *Soc Psychiatry Psychiatr Epidemiol*. 2003;38:690–697.
- Himmel W, Dieterich A, Kochen MM. Will German patients accept their family physician as a gatekeeper? *J Gen Intern Med*. 2000;15:496–502.
- Dominguez Aurrecochea B, Valdivia Jimenez C. [Primary care pediatrics in the public health system of the twenty-first century. SESPAS report 2012]. *Gac Sanit*. 2012;26(Suppl 1):82–87.
- McEvoy P, Richards D. Gatekeeping access to community mental health teams: a qualitative study. *Int J Nurs Stud*. 2007;44:387–395.
- Gervas J, Perez Fernandez M, Starfield BH. Primary care, financing and gatekeeping in western Europe. *Fam Pract*. 1994;11:307–317.
- Stevens FC, van der Horst F, Hendrikse F. The gatekeeper in vision care. An analysis of the co-ordination of professional services in The Netherlands. *Health Policy*. 2002;60:285–297.
- Schafer W, Kroneman M, Boerma W, et al. The Netherlands: health system review. *Health Syst Transit*. 2010;12:1–228v-xxvii.
- Yip W, Hsiao W. Harnessing the privatisation of China's fragmented health-care delivery. *Lancet*. 2014;384:805–818.
- Hu S, Tang S, Liu Y, et al. Reform of how health care is paid for in China: challenges and opportunities. *Lancet*. 2008;372:1846–1853.
- Mo TJ. The poverty and social security of Hong Kong. Hong Kong: Zhong Hua Book Company; 1993:10–15.
- Xie Y, Dai T, Zhu K, et al. Analysis of residents' willingness to select community doctor as gatekeeper and its determinants. *Chinese Gen Pract*. 2010;13:1621–1623.
- Yao W, Lin Y, Zhong W, et al. A study on the willingness of first-contact care among the residents in Guangdong. *Soft Sci Health*. 2014;28:602–606.
- Tian G, Wang G, Jin S, et al. Analysis of outpatients' willingness to accept the first treatment in the community of Zhabei district of Shanghai. *Chinese Health Res*. 2014;17:241–243.
- Qin X, Zhang K, Hu D, et al. Analysis of residents' willingness to seek first contact in community health organizations in Jiansu Province. *Chinese Hosp Manag*. 2007;127:33–35.
- Gross R, Tabenkin H, Brammli-Greenberg S. Who needs a gatekeeper? Patients' views of the role of the primary care physician. *Fam Pract*. 2000;17:222–229.
- Grumbach K, Selby JV, Damberg C, et al. Resolving the gatekeeper conundrum: what patients value in primary care and referrals to specialists. *JAMA*. 1999;282:261–266.
- Steele LS, Glazier RH, Agha M, et al. The gatekeeper system and disparities in use of psychiatric care by neighbourhood education level: results of a nine-year cohort study in Toronto. *Health Policy*. 2009;4:e133–e150.
- Dong X, Liu L, Cao S, et al. Focus on vulnerable populations and promoting equity in health service utilization—an analysis of visitor characteristics and service utilization of the Chinese community health service. *BMC Public Health*. 2014;14:503.
- Bertakis KD, Azari R, Helms LJ, et al. Gender differences in the utilization of health care services. *J Fam Pract*. 2000;49:147–152.
- Palacios-Cena D, Hernandez-Barrera V, Jimenez-Garcia R, et al. Has the prevalence of health care services use increased over the last decade (2001–2009) in elderly people? A Spanish population-based survey. *Maturitas*. 2013;76:326–333.
- Redondo-Sendino A, Guallar-Castillon P, Banegas JR, et al. Gender differences in the utilization of health-care services among the older adult population of Spain. *BMC Public Health*. 2006;6:155.
- Parslow R, Jorm A, Christensen H, et al. Gender differences in factors affecting use of health services: an analysis of a community study of middle-aged and older Australians. *Soc Sci Med*. 1982;2004;59:2121–2129.
- Mash B, Fairall L, Adejayan O, et al. A morbidity survey of South African primary care. *PLoS One*. 2012;7:e32358.
- Dahrouge S, Hogg W, Tuna M, et al. Age equity in different models of primary care practice in Ontario. *Canad Fam Physician*. 2011;57:1300–1309.
- Macintyre S, Hunt K, Sweeting H. Gender differences in health: are things really as simple as they seem? *Soc Sci Med*. 1982;1996;42:617–624.
- Verbrugge LM. Gender and health: an update on hypotheses and evidence. *J Health Soc Behav*. 1985;26:156–182.
- Fernandez-Mayoralas G, Rodriguez V, Rojo F. Health services accessibility among Spanish elderly. *Soc Sci Med (1982)*. 2000;50:17–26.
- Leon-Munoz LM, Lopez-Garcia E, Graciani A, et al. Functional status and use of health care services: longitudinal study on the older adult population in Spain. *Maturitas*. 2007;58:377–386.
- Ladwig KH, Marten-Mittag B, Formanek B, et al. Gender differences of symptom reporting and medical health care utilization in the German population. *Eur J Epidemiol*. 2000;16:511–518.
- Cheng SH, Chiang TL. Disparity of medical care utilization among different health insurance schemes in Taiwan. *Soc Sci Med (1982)*. 1998;47:613–620.
- Gong Y, Yin X, Wang Y, et al. Social determinants of community health services utilization among the users in China: a 4-year cross-sectional study. *PLoS One*. 2014;9:e98095.
- Wang HH, Wong SY, Wong MC, et al. Patients' experiences in different models of community health centers in southern China. *Ann Fam Med*. 2013;11:517–526.
- Yang H, Huang X, Zhou Z, et al. Determinants of Initial Utilization of Community Healthcare Services among Patients with Major Non-Communicable Chronic Diseases in South China. *PLoS One*. 2014;9:e116051.