BMJ Open

Migration status and healthcare seeking behaviours among the Chinese labor-force: a nationally representative study

Boli Peng,[1,2,3] Hui Zhang ![ORCID],[4] Lishuo Shi,[2,3] Li Ling ![ORCID] [2,3]

¹Department of Actuarial Science, School of Insurance, Guangdong University of Finance, Guangzhou, China
²Department of Medical Statistics, School of Public Health, Sun Yat-sen University, Guangzhou, China
³Center for Migrant Health Policy, Sun Yat-sen University, Guangzhou, China
⁴Department of Health Policy and Management, School of Public Health, Sun Yat-sen University, Guangzhou, China

Correspondence to
Dr Li Ling;
lingli@mail.sysu.edu.cn

ABSTRACT

Objectives We aimed to analyse the healthcare seeking behaviours (HSB) of populations with different migration status and examine the relationship between migration status and HSB.

Design A secondary analysis of cross-sectional data of China Labor-force Dynamics Survey wave 2016, which was conducted by the Sun Yat-sen University every 2 years since 2010.

Setting 29 provinces/cities/autonomous regions in mainland China, excluding Tibet and Hainan province.

Participants 3522 respondents in a condition in the previous 2 weeks or during the last 12 months were analysed.

Main outcome measures The migration status included internal migrants (IMs), returned population, rural residents and urban residents. The HSB including health services utilisation and choice of health facilities for their health services. Multivariable logistic regressions were used to examine the association between migration status and HSB.

Results 2193 and 1898 of 3522 respondents were in need of outpatient services (having a condition in the previous 2 weeks) or inpatient services (being asked to use the inpatient services during the last 12 months). Compared with urban residents, the returned population (OR=0.66, 95% CIs 0.49 to 0.89) and rural residents (OR=0.65, 95% CIs 0.51 to 0.82) were less likely to have an unmet need for outpatient services. The latter tended to choose lower-level hospitals, while the IMs preferred the lowest-level healthcare facilities for health services. After controlling for confounding factors, the results above did not reach any statistical significance.

Conclusion Association between migration status and HSB might be through enabling resource and needs. Returned population, IMs and rural residents tended to choose low-level hospitals for their health service needs, but this association was mainly associated with their poorer social and economic resources. Improving their social and economic resources would be helpful for reducing the barriers of HSB.

INTRODUCTION

Over the past decades, the development of vehicles and the diversity in economic development across different areas have vastly facilitated global migration. In East Asia and South Asia, the most important population migration is the internal migration,[1]

Strengths and limitations of this study

► Impact of migration status on health behaviours might be through enabling resource and needs.
► Needs were related to returned population and rural residents' outpatient service utilisation.
► Enabling resource and needs were related to the tendency to seek assistance in low-level health facilities.
► The cross-sectional study cannot predict the causal relationship between migration status and healthcare seeking behaviours.
► The secondary data did not include all potential influence variables, including the geographical distance to different health facilities.

motivated by rapid urbanisation.[2] In China, the population of internal migrants (IMs) reached a peak of 253 million in 2014 and subsequently plateaued. In 2016, the population of IMs reached a dynamic balance and slightly decreased to 245 million.[3] Some of the IMs returned (returned population) because of the development of middle and small cites. Around 40% live in the metropolis, but only a few have the opportunity to obtain permanent household and settle down.[2]

Migration has improved the IMs' working conditions and economic status[4] but has produced other problems, especially with their health. The famous 'healthy migrant' theory[5] indicated that migrants were in good health status and only returned when their health status worsened.[6] Thus, compared with residents, IMs would have fewer health service needs, while the returned population would have more. The healthcare seeking behaviours[7] (HSB; eg, utilisation, site) of these populations have become a significant issue for availing universal health coverage.

Previous studies on the association between health services utilisation (HSU) and migration status compared HSU between migrants and residents and found that similar to the immigrants in the USA,[8] IMs were less likely to use healthcare services compared with residents in
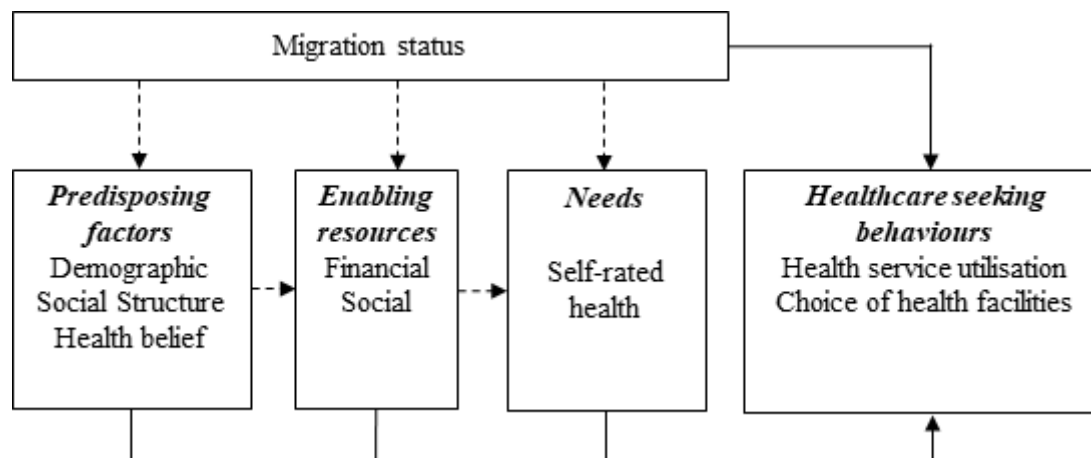
Figure 1 The theoretical framework of association between migration status and healthcare seeking behaviours.

China[9–11] and Vietnam.[12] As a result, IMs had poorer health-related quality of life and more health problems than residents.[13] However, another study found that IMs were more likely than residents to have 2-week visits to the clinics.[9] The HSU of returned population, who had higher needs and better enabling resource,[4] were understudied.

According to Anderson's Behaviour Model of Health Services Utilisation,[7] other factors are associated with HSU, comprising predisposing factors, enabling resources and needs. Not being permanently registered residents, IMs have limited access to social welfare in their host cities,[14] including working conditions and social medical insurance (SMI).[15] IMs also have poorer social resources in their host cities. These factors[12] were importantly associated with IMs' HSU. After adjusting for these confounding factors and needs, the association between migration status and HSU among some subgroups of migrants (eg, male migrants, migrants working in industrial zones) did not reach statistical significance.[9–12] Based on this, we constructed our theoretical framework (figure 1). Another important factor of HSB concerns the site or place where the health service was provided.[16 17] We use the choice of health facilities to measure it in this study. International studies compared patients' choice of particular hospitals with adjusting characteristics of hospitals (size or capability of service),[18 19] while few divided health facilities into primary healthcare facilities, private and public hospitals.[20] Studies on choice of health facilities in China divided health facilities into different levels.[21 22]

Previous studies on the association between choice of health facilities and migration status also focused on migrants and residents and have found that IMs and rural residents were less likely to use high-level hospitals than urban residents.[21] A previous study also indicated that the returned population had better access to services of high-level hospitals after their return.[23] Some IMs would also return for inpatient services because of the limited healthcare access in their host cities,[24–26] indicating that the returned population were inclined to choose high-level hospitals.

Other factors associated with the choice of health facilities were similar to those of the HSU.[7] Among them, distance to health facilities,[18 27 28] social economic status,[22 29] health insurance[19] and diagnostic capacity[20] were the most important factors. IMs had lower health insurance coverage and socioeconomic status, which were positively associated with their choice of high-level hospitals.[22 30] After controlling for these factors, the diversity of choice of health facilities between IMs and residents might also decrease (figure 1).

Previous studies on HSB and migration status mainly compared the HSB of migrants with residents. We currently have insufficient knowledge on the returned population's HSB. Since enabling resources and needs differed among populations of different migration status, the comprehensive association between migration status and HSB still needs to be explored. In this study, we use the secondary public database of China Labor-force Dynamics Survey (CLDS) wave 2016 to compare the unadjusted and adjusted association between migration status and HSB, including HSU and the choice of health facilities.

Considering the diversity of healthcare needs and enabling resources among different populations, we draw the following hypotheses: (1) the migration status is associated with HSB. (2) After adjusting for predisposing factors, enabling resource and needs, the association described above might weaken, meaning migration status might be associated with the HSB through the predisposing factors, enabling resource and needs.

METHODS
Data and sampling
Data from the China Labor-force Dynamics Survey wave 2016 (CLDS 2016) were used. The CLDS is a national longitudinal survey (covering 29 provinces/cities/autonomous regions in mainland China, excluding Tibet and Hainan province) launched by the Sun Yat-sen University and conducted every 2 years since 2010. The CLDS 2016 was the third wave of this survey, with 10 063 follow-up samples from the second wave and 11 023 newly added participants based on the rotating panel design. The
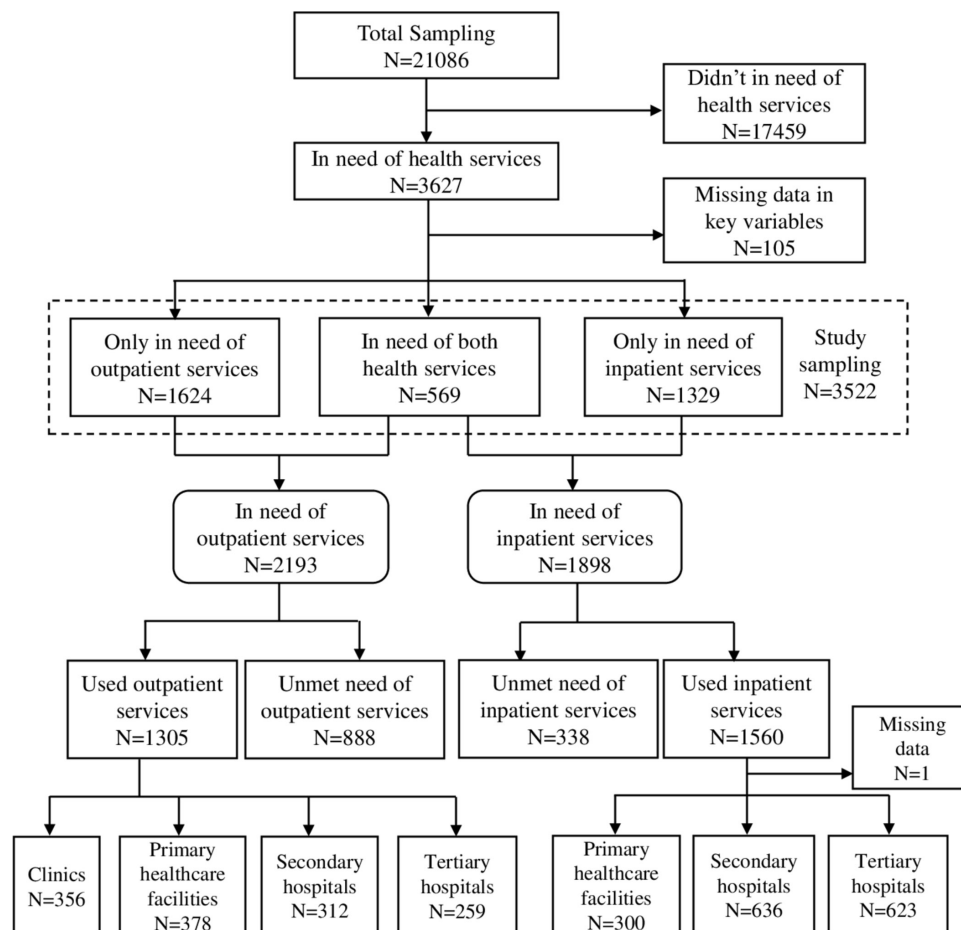
Figure 2 The study sampling and their healthcare seeking behaviours.

administrative district, community and household samples were selected by probability-proportional-to-size sampling with the population size, administrative units and socioeconomic status serving as the main stratification variables. All family members aged 16–64 years and those aged 65 years or above with a job were interviewed.[31] Data were collected in July 2016 and the quality control was conducted during the data collection aided by computer-assisted personal interviewing technology. The data are available online at http://css.sysu.edu.cn/.

This study limited the samples to 3522 respondents who completed the survey and had a health condition in the previous 2 weeks or were asked to be confined during the preceding 12 months (figure 2).

Patient and public involvement
The public was not involved in the design or planning of the study.

Variables and measurements
Outcome variables
HSB in this study included the HSU and choice of health facilities.

Health service utilisation
Inpatient/outpatient HSU was measured using two questions. (1) Did you have a condition in the previous

2 weeks/Have you been asked to be hospitalised by a doctor during the last 12 months? (Yes=In need of health services). (2) Did you visit a doctor after falling ill in the previous 2 weeks/ Have you used inpatient services during the last 12 months when a doctor asked you? (No=unmet needs of health services).

Choice of health facilities
In China, health facilities can be categorised into four levels: clinics (providing public health service and outpatient service for common disease), primary healthcare facilities (providing health services for common diseases), secondary hospitals (providing some specialised care) and tertiary hospitals (providing specialised care).[21 22] Patients can freely choose from these four types of health facilities for the common disease. The health facilities selected first when they had a condition in the previous 2 weeks were categorised into four levels (*clinics*, including village clinic, private clinic and healthcare post=1; *primary healthcare facilities*, including township hospital and community healthcare centre=2; *secondary hospitals*, comprising prefectural and district-level hospital=3; *tertiary hospitals*, including municipal-level hospital or above=4). Health facilities for inpatient services were categorised into three levels (*primary healthcare facilities*=1, *secondary hospitals*=2, *tertiary hospitals*=3).

Independent variables

Migration status was categorised into four groups according to the permanent registered residence (*hukou*) and migration experience[6] (IMs=1, returned population=2, rural residents=3, urban residents=4). IMs in this study referred to those living beyond their registered residence for >6 months as of the survey. The returned population referred to those who were living in their *hukou* but had experienced migrating.

Confounding variables

The potential influence factors associated with HSB comprised three dimensions, namely, predisposing factors, enabling resources and needs, referring to Anderson's Behaviour Model of Health Services Utilisation.[7]

Predisposing factors

The predisposing factors included the demographic characteristics, social structure and health belief. The demographic characteristics comprised age, gender and marital status. The social structure included educational level, occupation status (employer/employee=1, self-employed=2, agricultural=3, unemployed=4) and social class. Social class was measured by the question, 'which social class do you think you belong to?'. The answers ranged from 1 to 10, with 10 as the top class. The secondary data in this study lacked information on health belief. According to the health belief model, behaviours of smoking and drinking are predicted by health belief[32 33] and were thus used as proxies to measure health belief.

Enabling resources

Enabling resources comprised social support, time access for health service and economic resources (economic status and SMI).[34] Social support included household size (alone=1, living with one to two family members=2, with three to four family members=3, with five or more family members=4), size of friend network[35] (zero=1, one to two=2, three to five=3, six or more=4) and social connection with neighbours (continuous variables). The score of the social connection was added from three questions scoring 1 to 5: (1) familiarity with neighbour; (2) trust for neighbour; (3) mutual help.[36–38] The time access for health services was measured by the weekly working hours (<20 hours=1, 20 to 39 hours=2, 40 to 59 hours=3, 60 hours or more=4) and monthly working days (22 days or less=1; 23 days or more=2). Economic resources comprised the economic status (measured by the household income per capita, which was categorised into three equal groups[17 21] by the tri-sectional quantiles; low=1, middle=2, high=3) and SMI[24 26] (None=0, New Rural Cooperative Medical Scheme (NRCMS)=1, Urban Resident-based Basic Medical Insurance(URBMI)=2, Urban Employee-based Basic Medical Insurance (UEBMI)=3, Doubly/Multi-insured=4; ref=UEBMI). Each of the SMI was funded and managed separately and locally and was only legal for particular populations.[24]

In addition, we included the economic development level of the region (measured by the average income of residents in the region in 2016 (Data source: China Statistic Yearbook 2017 Table 6-17 at http://www.stats.gov.cn/tjsj/ndsj/2017/indexch.htm), low=1, middle=2, high=3) as contextual factors.

Need

We only analysed the HSB of respondents who were in need (had a condition in the previous 2 weeks or were asked to be hospitalised during the last 12 months). The self-rated health status (excellent/very good=1, average=2, poor/worse=3) and body mass index (BMI, normal=0, overweight=1, obesity=2, thin=3) were also included.

Statistical analyses

First, we conducted a descriptive analysis using means, frequency, SE and distribution proportion. Then, the χ^2 test was performed to compare the characteristics of different populations of the labour force. Third, a univariate and multivariable logistic regression model was conducted to detect the correlation between the variables and HSB and select confounding variables included in the final model. The threshold of p for the confounding variables included was 0.1, as shown in the multivariable logistic regression model. We selected the confounding variables included in the final model also based on previous literature. Finally, the association between migration status and HSB (comprising HSU and choice of health facilities) was assessed by the adjusted ORs (AORs) and their 95% CIs of the multivariable logistic regression model. In addition, we conducted a sensitivity analysis by including all the potential confounding variables in the models. Statistical significance of the χ^2, correlation and logistic regression was evaluated by a two-sided significance of p<0.05.

All these analyses were performed through SPSS statistics V.20.0.

RESULTS

Demographic characteristics and socioeconomic status of the participants

We included a total of 3522 respondents who needed outpatient or inpatient services. Table 1 shows their demographic and socioeconomic characteristics. The enabling resources differed among the populations. IMs had poor social resource (social class and social connection). IMs (41.7%), returned population (56.5%) and rural residents (89.6%) were mainly enrolled in the NRCMS. IMs had high rates of being uninsured (20.0%) and multi-insured (16.2%). The urban residents had the best economic status, with 53.1% from the high-income household, followed by the IMs and returned population, while only 13.6% of rural residents were from the high-income household. The returned population and rural residents had poorer self-rated health status.

Table 1 Comparison of the characteristics of the populations in four subgroups

Variables	Internal migrants (n=235)	Returned population (n=600)	Rural residents (n=2118)	Urban residents (n=569)	Total (n=3522)	P value*
Gender						
Male	85 (36.2)	217 (36.2)	889 (42.0)	270 (47.5)	1461 (41.5)	<0.001
Female	150 (63.8)	383 (63.8)	1229 (58.0)	299 (52.5)	2061 (58.5)	
Age (years)						
15–	74 (31.5)	66 (11.0)	202 (9.5)	81 (14.2)	423 (12.0)	<0.001
30–	67 (28.5)	141 (23.5)	354 (16.7)	120 (21.1)	682 (19.4)	
45–	94 (40.0)	393 (65.5)	1562 (73.8)	368 (64.7)	2417 (68.6)	
Marital status						
Married	189 (80.4)	516 (86.0)	1855 (87.6)	448 (78.7)	3008 (85.4)	<0.001
Single/divorced/widowed	46 (19.6)	84 (14.0)	263 (12.4)	121 (21.3)	514 (14.6)	
Education level						
Illiteracy/primary school	68 (28.9)	232 (38.6)	1246 (58.8)	86 (15.1)	1632 (46.3)	<0.001
Middle school	73 (31.1)	178 (29.7)	632 (29.9)	165 (29.0)	1048 (29.8)	
Senior/high/equivalent school	55 (23.4)	100 (16.7)	204 (9.6)	187 (32.9)	546 (15.5)	
College and above	39 (16.6)	90 (15.0)	36 (1.7)	131 (23.0)	296 (8.4)	
Household size						
Alone	18 (7.7)	15 (2.5)	29 (1.4)	20 (3.5)	82 (2.3)	<0.001
With one to two family members	63 (26.8)	171 (28.5)	468 (22.1)	277 (48.7)	979 (27.8)	
With three to four family members	90 (38.3)	246 (41.0)	855 (40.4)	185 (32.5)	1376 (39.1)	
With five or more family members	64 (27.2)	168 (28.0)	766 (36.1)	87 (15.3)	1085 (30.8)	
Household income per capita						
Low	43 (18.3)	186 (31.0)	1135 (53.6)	68 (11.9)	1432 (40.7)	<0.001
Middle	93 (39.6)	214 (35.7)	695 (32.8)	199 (35.0)	1201 (34.1)	
High	99 (42.1)	200 (33.3)	288 (13.6)	302 (53.1)	889 (25.2)	
Occupation status						
Self-employed	32 (13.6)	43 (7.2)	139 (6.5)	33 (5.8)	247 (7.0)	<0.001
Agricultural	16 (6.8)	161 (26.8)	1044 (49.3)	30 (5.3)	1251 (35.5)	
Unemployed	65 (27.7)	198 (33.0)	641 (30.3)	280 (49.2)	1184 (33.6)	
Employer/employees	122 (51.9)	198 (33.0)	294 (13.9)	226 (39.7)	840 (23.9)	
Weekly working hours						
0–	88 (37.5)	264 (44.0)	971 (45.8)	310 (54.5)	1633 (46.3)	<0.001
20–	12 (5.1)	68 (11.3)	286 (13.5)	45 (7.9)	411 (11.7)	
40–	80 (34.0)	181 (30.2)	506 (23.9)	159 (27.9)	926 (26.3)	
60–	55 (23.4)	87 (14.5)	355 (16.8)	55 (9.7)	552 (15.7)	
Monthly working days						
0–	118 (50.2)	342 (57.0)	1125 (53.1)	411 (72.2)	1996 (56.7)	<0.001
23–	117 (49.8)	258 (43.0)	993 (46.9)	158 (27.8)	1526 (43.3)	
Economic development of the region						
Low	41 (17.4)	195 (32.5)	838 (39.6)	152 (26.7)	1226 (34.8)	<0.001
Middle	30 (12.8)	131 (21.8)	531 (25.1)	156 (27.4)	848 (24.1)	
High	164 (69.8)	274 (45.7)	749 (35.3)	261 (45.9)	1448 (41.1)	
Social medical insurance						
None	47 (20.0)	47 (7.8)	136 (6.4)	54 (9.5)	284 (8.1)	<0.001
NRCMS	98 (41.7)	339 (56.5)	1897 (89.6)	61 (10.7)	2395 (68.0)	
URBMI	21 (8.9)	58 (9.7)	23 (1.1)	176 (30.9)	278 (7.9)	

Continued

Table 1 Continued						
Variables	**Internal migrants (n=235)**	**Returned population (n=600)**	**Rural residents (n=2118)**	**Urban residents (n=569)**	**Total (n=3522)**	**P value***
Doubly/multi-insured	38 (16.2)	55 (9.2)	22 (1.0)	75 (13.2)	190 (5.4)	
UEBMI	31 (13.2)	101 (16.8)	40 (1.9)	203 (35.7)	375 (10.6)	
Social class	3.71 (1.87)	3.93 (1.83)	3.96 (1.79)	4.14 (1.84)	3.97 (1.81)	
Social connection	8.60 (2.63)	10.37 (2.48)	11.26 (2.16)	9.81 (2.42)	10.70 (2.43)	
Size of friend network						
0	52 (22.1)	121 (20.2)	392 (18.5)	88 (15.5)	653 (18.6)	0.002
1–2	35 (14.9)	65 (10.8)	207 (9.8)	74 (13.0)	381 (10.8)	
3–5	84 (35.8)	190 (31.7)	670 (31.6)	170 (29.9)	1114 (31.6)	
6–	64 (27.2)	224 (37.3)	849 (40.1)	237 (41.6)	1374 (39.0)	
BMI						
Overweight	54 (23.0)	151 (25.2)	496 (23.4)	187 (32.9)	888 (25.2)	<0.001
Obesity	16 (6.8)	55 (9.2)	162 (7.6)	47 (8.3)	280 (8.0)	
Thin	37 (15.7)	54 (9.0)	260 (12.3)	52 (9.1)	403 (11.4)	
Normal	128 (54.5)	340 (56.6)	1200 (56.7)	283 (49.7)	1951 (55.4)	
Smoking						
Non-smoker	177 (75.3)	457 (76.2)	1571 (74.2)	390 (68.5)	2595 (73.7)	0.061
Former smoked	8 (3.4)	30 (5.0)	93 (4.4)	33 (5.8)	164 (4.6)	
Smoking	50 (21.3)	113 (18.8)	454 (21.4)	146 (25.7)	763 (21.7)	
Drinking						
Never drank	189 (80.4)	502 (83.7)	1772 (83.7)	462 (81.2)	2925 (83.0)	0.122
Former drank	4 (1.7)	15 (2.5)	76 (3.6)	24 (4.2)	119 (3.4)	
Regularly drinking	42 (17.9)	83 (13.8)	270 (12.7)	83 (14.6)	478 (13.6)	
Self-rated health						
Excellent/very good	82 (34.9)	174 (29.0)	485 (22.9)	198 (34.8)	939 (26.7)	<0.001
Average	94 (40.0)	214 (35.7)	616 (29.1)	219 (38.5)	1143 (32.4)	
Poor/worse	59 (25.1)	212 (35.3)	1017 (48.0)	152 (26.7)	1440 (40.9)	

*P values were based on the χ^2 test.

NRCMS, New Rural Cooperative Medical Scheme; UEBMI, Urban Employee-based Basic Medical Insurance; URBMI, Urban Resident-based Basic Medical Insurance.

HSB of the participants in a condition

About 2193 and 1898 of 3522 respondents were in need of outpatient services (having a condition in previous 2 weeks) or inpatient services (asked to be hospitalised during the last 12 months) (figure 2). Among them, 59.5% (1305/2193) and 82.2% (1560/1898) used outpatient and inpatient services, respectively. Of the patients who used outpatient health services, 378 (29.0%) chose to visit primary healthcare facilities, followed by clinics (356, 27.3%), secondary hospitals (312, 23.9%) and tertiary hospitals (259, 19.8%). Out of 1559 patients (one missing data), 636 (40.8%) selected secondary hospitals for inpatient service, followed by tertiary hospitals (623, 40.0%) and primary healthcare facilities (300, 19.2%) (figure 2).

Table 2 shows the HSB of populations in the four subgroups. Urban residents were less likely to use outpatient services compared with other subgroups (p=0.004). IMs have a high proportion of unmet inpatient services

needs compared with other subgroups. Compared with the IMs and returned population, urban residents tend to choose high-level hospitals for outpatient and inpatient services, while the rural residents preferred low-level hospitals.

Association between unmet health service needs and migration status

Unmet need for outpatient services

Returned population and rural residents were less likely to have an unmet need for outpatient services compared with urban residents. After controlling for confounding factors, including age, household size, occupation status, weekly working hours, social resources (social class), SMI, health behaviours (drinking and smoking) and self-rated health status, this association had no statistical significance. The sensitivity analysis showed the same results. The results indicated that the migration status

Table 2 Comparison of the healthcare seeking behaviours among different populations

Variables	Internal migrants (n=235)	Returned population (n=600)	Rural residents (n=2118)	Urban residents (n=569)	Total	P value*
Used outpatient services						
Yes	100 (59.9)	227 (61.0)	798 (61.4)	180 (50.8)	1305 (59.5)	0.004
No (unmet need)	67 (40.1)	145 (39.0)	502 (38.6)	174 (49.2)	888 (40.5)	
Used inpatient services						
Yes	67 (73.6)	276 (83.1)	957 (82.0)	260 (84.4)	1560 (82.2)	0.120
No (unmet need)	24 (26.4)	56 (16.9)	210 (18.0)	48 (15.6)	338 (17.8)	
Choice of health facilities for outpatient services						
Clinics	28 (28.0)	51 (22.5)	256 (32.1)	21 (11.7)	356 (27.3)	<0.001
Primary health facilities	28 (28.0)	70 (30.8)	232 (29.1)	48 (26.7)	378 (29.0)	
Secondary hospitals	18 (18.0)	45 (19.8)	214 (26.8)	35 (19.4)	312 (23.9)	
Tertiary hospitals	26 (26.0)	61 (26.9)	96 (12.0)	76 (42.2)	259 (19.8)	
Choice of health facilities for inpatient services						
Primary health facilities	11 (16.4)	48 (17.4)	223 (23.3)	18 (6.9)	300 (19.2)	<0.001
Secondary hospitals	17 (25.4)	97 (35.3)	458 (47.9)	64 (24.6)	636 (40.8)	
Tertiary hospitals	39 (58.2)	130 (47.3)	276 (28.8)	178 (68.5)	623 (40.0)	

*P values were based on the χ^2 test.

was associated with the unmet outpatient service need through these confounding factors (table 3).

Returned population and rural residents had poorer self-rated health status. Patients with good self-rated health status were more likely to have an unmet need for outpatient services compared with those with poor health status. We found that social class was negatively associated with the unmet need for outpatient service, while smoking and drinking were positively associated with it (table 3).

Unmet need for inpatient services

Table 3 also shows the factors associated with the unmet need for inpatient services. Both before and after controlling for the confounding factors, namely the economic development of the region, social resources (social class and social connection), SMI, health behaviours (drinking and smoking) and self-rated health status, IMs were more likely to have an unmet need for inpatient services compared with urban residents (AOR=1.95, 95% CIs 1.06 to 3.58). The sensitivity analysis showed similar results. This result indicates that the difference in the confounding factors did not affect the IMs' unmet needs for inpatient services. However, the returned population had a similar rate of using inpatient service as the urban residents.

IMs had poorer social resources (social class and social connection), which were negatively associated with the unmet need for inpatient services. They were more likely to have no SMI or be multiple insured, which were

positively associated with the unmet need for inpatient service compared with those enrolled in UEBMI.

Association between the choice of the health facilities and migration status

Choice of health facilities for outpatient services

The rural residents and returned population tended to choose lower-level health facilities for outpatient services; IMs preferred clinics. After controlling for the confounding factors, including economic resource (SMI and household income), gender, age, education level, occupation status, weekly working hours, monthly working days, size of friend network, BMI, smoking and self-rated health, rural residents were still more likely to visit the clinics (AOR=2.43, 95% CIs 1.20 to 4.92) first than tertiary hospitals compared with urban residents. The returned population and IMs had a similar choice of health facilities with the urban residents (table 4). Similar results were obtained using IMs as the reference and after conducting sensitivity analysis.

However, IMs, returned population and rural residents were mainly participants in the NRCMS and had lower household income per capita, which were positively associated with using outpatient services in low-level health facilities first. When SMI and household income were excluded from the confounding factors in the multivariable regression, the association between the migration status and choice of health facilities were consistent with that of the univariate regression (table 4).

Table 3 Factors associated with the unmet need for health services

Variables	Unmet need for outpatient service in the previous 2 weeks		Unmet need for inpatient service during the last 12 months	
	UOR (95% CIs)	AOR§ (95% CIs)	UOR (95% CIs)	AOR¶ (95% CIs)
Migration status				
Internal migrants	0.69 (0.48 to 1.01)	0.78 (0.52 to 1.17)	1.94 (1.11 to 3.39)*	1.95 (1.06 to 3.58)*
Returned population	0.66 (0.49 to 0.89)†	0.79 (0.57 to 1.10)	1.10 (0.72 to 1.67)	1.09 (0.68 to 1.75)
Rural residents	0.65 (0.51 to 0.82)‡	0.81 (0.59 to 1.12)	1.19 (0.84 to 1.67)	1.11 (0.69 to 1.77)
Urban residents	ref	ref	ref	ref
Social medical insurance				
None	0.89 (0.60 to 1.31)	0.90 (0.58 to 1.39)	2.35 (1.31 to 4.22)†	2.16 (1.15 to 4.05)*
NRCMS	0.70 (0.53 to 0.94)*	0.76 (0.52 to 1.11)	1.79 (1.13 to 2.82)*	1.60 (0.92 to 2.78)
URBMI	1.01 (0.68 to 1.50)	0.94 (0.62 to 1.43)	1.79 (0.97 to 3.30)	1.62 (0.86 to 3.05)
Doubly/multi-insured	0.91 (0.58 to 1.42)	0.88 (0.55 to 1.39)	2.23 (1.14 to 4.34)*	2.38 (1.20 to 4.73)*
UEBMI	ref	ref	ref	ref
Social class	0.96 (0.92 to 1.01)	0.95 (0.90 to 0.99)*	0.88 (0.82 to 0.94)‡	0.91 (0.85 to 0.98)*
Social connection	–	–	0.95 (0.91 to 1.00)*	0.95 (0.90 to 1.00)*
Smoking				
Non-smoker	0.65 (0.52 to 0.79)‡	0.69 (0.55 to 0.86)†	0.77 (0.58 to 1.01)	0.72 (0.53 to 0.97)*
Former smoked	0.44 (0.26 to 0.74)†	0.48 (0.28 to 0.82)†	0.30 (0.15 to 0.62)†	0.24 (0.11 to 0.51)‡
Smoking	ref	ref	ref	ref
Drinking				
Never drank	0.68 (0.53 to 0.87)†	0.76 (0.58 to 0.99)*	1.14 (0.78 to 1.64)	1.15 (0.77 to 1.72)
Former drank	0.67 (0.38 to 1.19)	0.79 (0.43 to 1.44)	1.82 (1.00 to 3.30)*	2.33 (1.23 to 4.41)†
Regularly drinking	ref	ref	ref	ref
Self-rated health				
Excellent/very good	1.54 (1.24 to 1.91)‡	1.52 (1.19 to 1.95)†	0.54 (0.39 to 0.74)‡	0.58 (0.41 to 0.82)†
Average	1.09 (0.90 to 1.34)	1.09 (0.88 to 1.35)	0.95 (0.73 to 1.24)	1.01 (0.76 to 1.34)
Poor/worse	ref	ref	ref	ref

*P<0.05.
†P<0.01.
‡P<0.001.
§We also adjusted age, household size, occupation status and weekly working hours.
¶We also adjusted the economic development of the region.
AOR, adjusted OR; NRCMS, New Rural Cooperative Medical Scheme; UEBMI, Urban Employee-based Basic Medical Insurance; UOR, Unadjusted OR; URBMI, Urban Resident-based Basic Medical Insurance .

Choice of health facilities for inpatient services

Rural residents and returned population tended to choose low-level hospitals to be hospitalised in, while the IMs preferred the primary hospitals. After controlling for the confounding factors, including economic resource (SMI and household income), economic development of the region, educational level and occupation status, rural residents still tended to use the inpatient service of the prefectural-level hospitals (AOR=1.62, 95% CIs 1.04 to 2.54) instead of tertiary hospitals compared with their urban counterparts. IMs and returned population had a similar choice of the hospitals for inpatient service as the urban residents (table 5). When using IMs as the reference, we found similar results. The sensitivity analysis also showed the same results.

Besides, IMs were more likely to have no insurance. IMs, returned population and rural residents were mainly enrolled in NRCMS with lower household income per capita, which were positively associated with the choice of the lower level hospitals for hospitalisation. This result was similar to that of the choice of health facilities for outpatient services (table 5).

DISCUSSION

This is the first study that examines the association between migration status and HSB from the perspective of migration phase by including the returned population. The HSB in this paper included two parts: HSU and choice of health facilities. The HSB and most of its confounding

Table 4 Factors associated with the choice of health facilities for outpatient services

Variables§	Clinics		Primary health facilities		Secondary hospitals	
	UOR (95% CIs)	AOR (95% CIs)	UOR (95% CIs)	AOR (95% CIs)	UOR (95% CIs)	AOR (95% CIs)
Migration status						
Internal migrants	3.90 (1.90 to 8.01)*	2.06 (0.91 to 4.69)	1.71 (0.89 to 3.25)	1.16 (0.56 to 2.40)	1.50 (0.73 to 3.09)	1.05 (0.47 to 2.32)
Returned population	3.03 (1.64 to 5.57)*	1.40 (0.69 to 2.82)	1.82 (1.10 to 2.99)†	1.22 (0.69 to 2.17)	1.60 (0.92 to 2.79)	0.88 (0.47 to 1.66)
Rural residents	9.65 (5.64 to 16.51)*	2.43 (1.20 to 4.92)†	3.83 (2.48 to 5.90)*	1.75 (0.96 to 3.21)	4.84 (3.03 to 7.72)*	1.52 (0.80 to 2.90)
Urban residents	ref	ref	ref	ref	ref	ref
Social medical insurance						
None	5.40 (2.25 to 12.96)*	1.92 (0.71 to 5.17)	1.77 (0.89 to 3.53)	0.93 (0.42 to 2.07)	2.50 (1.16 to 5.37)†	1.27 (0.53 to 3.07)
NRCMS	12.21 (5.98 to 24.94)*	2.95 (1.20 to 7.23)†	3.17 (1.95 to 5.16)*	1.20 (0.60 to 2.43)	4.99 (2.83 to 8.79)*	1.80 (0.82 to 3.96)
URBMI	2.06 (0.83 to 5.12)	1.27 (0.48 to 3.34)	1.18 (0.61 to 2.26)	0.89 (0.44 to 1.82)	1.10 (0.50 to 2.41)	0.87 (0.37 to 2.00)
Doubly/multi-insured	1.20 (0.44 to 3.26)	0.93 (0.32 to 2.72)	0.53 (0.25 to 1.14)	0.50 (0.22 to 1.12)	0.67 (0.28 to 1.60)	0.67 (0.27 to 1.67)
UEBMI	ref	ref	ref	ref	ref	ref
Household income						
Low	6.76 (4.35 to 10.51)*	2.72 (1.58 to 4.66)*	3.11 (2.09 to 4.63)*	1.69 (1.03 to 2.79)†	5.00 (3.25 to 7.71)*	2.07 (1.22 to 3.52)‡
Middle	4.21 (2.72 to 6.53)*	2.43 (1.48 to 3.99)*	2.11 (1.43 to 3.12)*	1.46 (0.93 to 2.27)	2.85 (1.84 to 4.39)*	1.74 (1.07 to 2.82)†
High	ref	ref	ref	ref	ref	ref

The ref of Y was 'tertiary hospitals'.
*P<0.001.
†P<0.05.
‡P<0.01.
§We also adjusted gender, age, education level, occupation status, weekly working hours, monthly working days, size of friend network, BMI, smoking and self-rated health.
AOR, adjusted OR; NRCMS, New Rural Cooperative Medical Scheme; UEBMI, Urban Employee-based Basic Medical Insurance; URBMI, Urban Resident-based Basic Medical Insurance .

Table 5 Factors associated with the choice of health facilities for inpatient services

Variables§	Primary health facilities		Secondary hospitals	
	UOR (95% CIs)	AOR (95% CIs)	UOR (95% CIs)	AOR (95% CIs)
Migration status				
Internal migrants	2.79 (1.22 to 6.37)*	1.29 (0.51 to 3.29)	1.21 (0.64 to 2.29)	0.85 (0.42 to 1.68)
Returned population	3.65 (2.03 to 6.57)†	1.22 (0.61 to 2.45)	2.08 (1.41 to 3.06)†	1.21 (0.77 to 1.89)
Rural residents	7.99 (4.77 to 13.38)†	1.24 (0.64 to 2.42)	4.62 (3.34 to 6.37)†	1.62 (1.04 to 2.54)*
Urban residents	ref	ref	ref	ref
Social medical insurance				
None	11.46 (4.64 to 28.34)†	5.44 (2.05 to 14.46)‡	3.29 (1.90 to 5.70)†	1.81 (0.99 to 3.33)
NRCMS	16.17 (7.44 to 35.16)†	5.17 (2.10 to 12.76)†	5.35 (3.67 to 7.79)†	2.09 (1.26 to 3.45)‡
URBMI	1.30 (0.40 to 4.23)	0.93 (0.28 to 3.10)	1.42 (0.83 to 2.43)	1.21 (0.69 to 2.13)
Doubly/multi-insured	1.21 (0.30 to 4.85)	1.05 (0.25 to 4.35)	1.17 (0.61 to 2.24)	1.07 (0.54 to 2.09)
UEBMI	ref	ref	ref	ref
Household income				
Low	6.37 (4.26 to 9.54)†	2.30 (1.45 to 3.64)†	3.99 (2.98 to 5.36)†	1.90 (1.34 to 2.70)†
Middle	2.63 (1.72 to 4.00)†	1.45 (0.92 to 2.29)	2.09 (1.56 to 2.81)†	1.42 (1.03 to 1.96)*
High	ref	ref	ref	ref

The ref of Y was 'tertiary hospitals'.
*P<0.05.
†P<0.001.
‡P<0.01.
§We also adjusted economic development of the region, education level and occupation status.
AOR, adjusted OR; NRCMS, New Rural Cooperative Medical Scheme; UEBMI, Urban Employee-based Basic Medical Insurance; URBMI, Urban Resident-based Basic Medical Insurance.

factors, related to predisposing factors, enabling resource and needs, differed between populations of different migration status. After controlling for these confounding factors, some of the associations between HSB and migration status did not reach statistical significance. This result was consistent with our hypothesis, which was that migration status would be associated with the HSB through the predisposing factors, enabling resource and needs. In the following parts, we discuss the associations between HSB and migration status or factors associated with the migration status.

Migration status and HSU
IMs' HSU and enabling resource
Compared with urban residents, IMs were more likely to have unmet needs for inpatient services, even after controlling for the confounding factors. This result was consistent with other studies.[9–12]

Difference in enabling resources, which were related to the HSU, would partly explain IMs' higher unmet need for inpatient service.

Enabling resource

Social resource
IMs had lower social class and less social connection than the other subgroups. The social class was associated with economic and social resource, which was

positively associated with the HSU.[9 34] Similarly, the social connection was also positively correlated with social resource, which could enable the respondents to use inpatient services.[11 34] The lesser social resource may partly explain IMs' higher unmet need for inpatient services.

Economic resource
IMs were more likely to have NRCMS or no SMI. We found that not having any SMI was positively associated with the unmet need for inpatient services, which was consistent with the result of a previous study.[12] The NRCMS that IMs participated in was from their hometown, which rarely covered the medical bills beyond their hometown or had complicated procedures for reimbursement in 2016.[24 39] Thus, IMs enrolled in NRCMS were in a similar situation as those covered by no SMI. The SMI status of IMs may explain the high unmet needs for inpatient services. In addition, IMs' high unmet inpatient services needs also indicates that there might be adverse selection in the SMI, such that healthy populations rarely participate in the SMI.

Returned population's HSU and needs
Our results also indicated that the returned population was more likely to use inpatient services than IMs, in line with our hypothesis and previous studies.[24 25] One

explanation would be that IMs would return due to low health access in the host cities.[24–26]

The other reason might be the improved economic ability[4] but worse health status of the returned population.[5] In this study, we found that the returned population and rural residents had poorer self-rated health status compared with the urban residents. Self-rated health status was positively associated with the unmet need for outpatient services.[11 40] This explained the high outpatient services utilisation of these two populations.

Migration status and choice of health facilities for health service

IMs' choice of health facilities and SMI

IMs preferred to use health service in lower-level health facilities,[21] but the AOR did not reach statistical significance. This result was not consistent with previous research.[21] A possible explanation may be that they did not control confounding factors such as SMI, and the dependent variable was whether they used the services of high-level hospitals or not and their sampling only included a district in one city.[21]

Similar to the HSU, IMs were more likely to have NRCMS or no SMI and the NRCMS that IMs enrolled in could rarely covered the medical bills of host cities in 2016.[24 39] IMs enrolled in NRCMS were similar to those covered by no SMI. Being without any SMI was positively associated with the choice of low-level hospitals for inpatient services, consistent with the results of a previous study.[12] Thus, The SMI status of IMs may also explain the preference for low-level hospitals.

Returned population and rural residents' choice of health facilities and economic resources

The rural residents were more likely to use health services in lower-level health facilities.[21] After controlling for other confounding factors, the rural residents' tendency for using outpatient service of clinics and using inpatient services of the prefectural-level hospital was still significant. The reason might be as follows. First, since big gaps of diagnostic capacity existed among different levels of hospitals and patients can freely choose hospitals in China, patients tended to choose higher-level hospitals which were supposed to have better diagnostic capacity.[20] Second, living further from tertiary hospitals than urban residents, rural residents would be more likely to choose secondary hospitals nearby for hospitalisation.[21] This result suggests that geographical access is an important role in the choice of health facilities.[18 27 28]

With low economic resource, the returned population had a similar situation with the rural residents, but the adjusted associations mentioned above did not reach statistical significance. In other words, the returned population was less likely to choose low-level hospitals than rural residents. This result was in line with the previous study on immigrants,[23] which suggested that immigrants' medical return was driven by class transform. Even the

returned population coming from rural area were less likely to be restricted by the geographical distance.

Additionally, the economic resources can also explain the preference for low-level health facilities of the returned population and rural residents.

Social medical insurance

Rural residents and the returned population mainly participated in the NRCMS. The NRCMS had a diminishing reimbursement rate for the medical bills of higher-level hospitals. Enrolment in the NRCMS was positively associated with visiting lower-level health facilities for health services. This result was consistent with other literature[19 30] and may explain the preference for low-level hospitals for health services among rural residents and returned population.

Household income

The returned population had poorer economic status; rural residents had the worst. We found that household income was positively associated with choice of low-level health facilities for health services. This explained the preference of low-level hospitals among rural residents and returned population. Additionally, the correlation of household income and the choice of health facilities also suggested that economic status was an important associated factor.[22 29 30]

Limitations

This study has some limitations. First, the cross-sectional study cannot predict the causal relationship between variables but can inform future researchers about migration status and HSB. Second, the association between self-rated health status and unmet need for inpatient services can only indicate the correlation between these two variables. Third, the data did not include information on the geographical distance to different health facilities. However, since the distances to higher-level hospitals were further in rural areas compared with those in urban areas, generally, migration status is associated with the choice of health facilities through their locations. Fourth, the healthcare service utilisation of different populations only focused on the outpatient and inpatient service, excluding the preventive medical service (eg, immunisation).

CONCLUSION

The results of this study suggest that the impact of migration status on HSB might be through enabling resources and needs. Worse self-rated health was associated with returned population and rural residents' lower unmet need for outpatient services. The enabling resources, including SMI and household income, differed between the four subgroups of population. This difference was associated with IMs, returned population and rural residents' high preference for low-level health facilities for health service. This result suggests that the barriers of HSB for returned

ORCID iDs
Hui Zhang http://orcid.org/0000-0001-5833-5020
Li Ling http://orcid.org/0000-0003-3292-274X

REFERENCES

1. United Nations,Department of Economic and Social Affairs, Population Division. *International migration report 2017*. New York, 2017.
2. Department of Service and Management of Migrant Population National Health and Family Planning Commission of China. *Report on China's migrant population development 2015*. Beijing: China Population Publishing House, 2015.
3. Department of Service and Management of Migrant Population National Health and Family Planning Commission of China. *Report on China's migrant population development 2017*. Beijing: China Population Publishing House, 2017.
4. Salazar MA, Hu X. Health and lifestyle changes among migrant workers in China: implications for the healthy migrant effect. *Lancet Diabetes Endocrinol* 2016;4:89–90.
5. Abraído-Lanza AF, Dohrenwend BP, Ng-Mak DS, et al. The Latino mortality paradox: a test of the "salmon bias" and healthy migrant hypotheses. *Am J Public Health* 1999;89:1543–8.
6. Zhang L, Liu S, Zhang G, et al. Internal migration and the health of the returned population: a nationally representative study of China. *BMC Public Health* 2015;15:719.
7. Andersen RM. Revisiting the behavioral model and access to medical care: does it matter? *J Health Soc Behav* 1995;36:1–10.
8. Torres JM, Waldinger R. Civic stratification and the exclusion of undocumented immigrants from cross-border health care. *J Health Soc Behav* 2015;56:438–59.
9. Lu L, Zeng J, Zeng Z. What limits the utilization of health services among China labor force? analysis of inequalities in demographic, socio-economic and health status. *Int J Equity Health* 2017;16:30.
10. Lu L, Zeng J, Zeng Z. Demographic, socio-economic, and health factors associated with use of health services among internal migrants in China: an analysis of data from a nationwide cross-sectional survey. *The Lancet* 2016;388.
11. Fan JX, Wen M, Jin L, et al. Disparities in healthcare utilization in China: do gender and migration status matter? *J Fam Econ Issues* 2013;34:52–63.
12. Le ATK, Vu LH, Schelling E. Utilization of health care services among internal migrants in Hanoi and its correlation with health insurance: a cross-sectional study. *Tap Chi Y Te Cong Cong* 2015;3:44–56.
13. Pham KTH, Nguyen LH, Vuong Q-H, et al. Health inequality between migrant and Non-Migrant workers in an industrial zone of Vietnam. *Int J Environ Res Public Health* 2019;16:1502.
14. Hu X, Cook S, Salazar MA. Internal migration and health in China. *The Lancet* 2008;372:1717–9.
15. Jin Y, Hou Z, Zhang D. Determinants of health insurance coverage among people aged 45 and over in China: who Buys public, private and multiple insurance. *PLoS One* 2016;11:e0161774.
16. Aday LA, Andersen R. A framework for the study of access to medical care. *Health Serv Res* 1974;9:208–20.
17. Andersen R, Newman JF. Societal and individual determinants of medical care utilization in the United States. *Milbank Mem Fund Q Health Soc* 1973;51:95–124.
18. Smith H, Currie C, Chaiwuttisak P, et al. Patient choice modelling: how do patients choose their hospitals? *Health Care Manag Sci* 2018;21:259–68.
19. Mosadeghrad AM, Mohammad Mosadeghrad A. Patient choice of a hospital: implications for health policy and management. *Int J Health Care Qual Assur* 2014;27:152–64.
20. Dündar C. Health-seeking behavior and medical facility choice in Samsun, Turkey. *Health Policy* 2017;121:1015–9.
21. Wei X, Pearson S, Zhang Z, et al. Comparing knowledge and use of health services of migrants from rural and urban areas in Kunming City, China. *J Biosoc Sci* 2010;42:743–56.
22. Wang H, Zhang D, Hou Z, et al. Association between social health insurance and choice of hospitals among internal migrants in China: a national cross-sectional study. *BMJ Open* 2018;8:e018440.
23. Horton SB. Medical returns as class transformation: situating migrants' medical returns within a framework of transnationalism. *Med Anthropol* 2013;32:417–32.
24. Mou J, Griffiths SM, Fong H, et al. Health of China's rural-urban migrants and their families: a review of literature from 2000 to 2012. *Br Med Bull* 2013;106:19–43.
25. Su D, Richardson C, Wen M, et al. Cross-Border utilization of health care: evidence from a population-based study in South Texas. *Health Serv Res* 2011;46:859–76.
26. Peng B-L, Ling L. Association between rural-to-urban migrants' social medical insurance, social integration and their medical return in China: a nationally representative cross-sectional data analysis. *BMC Public Health* 2019;19:86.
27. de Cruppé W, Geraedts M. Hospital choice in Germany from the patient's perspective: a cross-sectional study. *BMC Health Serv Res* 2017;17:720.
28. Keating NL, Kouri EM, He Y, et al. Location isn't everything: proximity, hospital characteristics, choice of hospital, and disparities for breast cancer surgery patients. *Health Serv Res* 2016;51:1561–83.
29. Ojifinni O, Ige O, Asuzu MC. Determinants of choice of health facility for reproductive morbidity by female traders in a Nigerian City. *Ann Ib Postgrad Med* 2018;16:37–43.
30. Du B, Miao F. Medical orientation of young migrants: evidence from Beijing, Shanghai and Shenzhen cities. *Population Research* 2012;36:71–86.
31. Wang J, Zhou Y, Liu S. China Labor-force dynamics survey. *Chinese Sociological Dialogue* 2017;2:83–97.
32. Rosenstock IM. The health belief model and preventive health behavior. *Health Educ Monogr* 1974;2:354–86.
33. Leavitt F. The health belief model and utilization of ambulatory care services. *Soc Sci Med Med Psychol Med Sociol* 1979;13:105–12.
34. Yang PQ, Hwang SH. Explaining immigrant health service utilization: a theoretical framework. *SAGE Open* 2016;6:1–15.
35. Xiao S. Theoretical basis and application in research of social support rating scale. *J Clin Psychiatry* 1994;4:98–100.
36. Kawachi I, Kennedy BP, Lochner K, et al. Social capital, income inequality, and mortality. *Am J Public Health* 1997;87:1491–8.
37. Sampson RJ, Raudenbush SW, Earls F. Neighborhoods and violent crime: a multilevel study of collective efficacy. *Science* 1997;277:918–24.
38. Harpham T, Grant E, Thomas E. Measuring social capital within health surveys: key issues. *Health Policy Plan* 2002;17:106–11.
39. Song Z, Ren S. Chronicle of events of medical insurance direct settlement policy in China. *Chinese Health* 2018:42–3.
40. Szwarcwald CL, Souza-Júnior PRB, Damacena GN. Socioeconomic inequalities in the use of outpatient services in Brazil according to health care need: evidence from the world health survey. *BMC Health Serv Res* 2010;10:217.