

# BMJ Open Association between resident status and patients' experiences of primary care: a cross-sectional study in the Greater Bay Area, China

JingLan Wu,<sup>1</sup> RuQing Liu,<sup>2</sup> Leiyu Shi,<sup>3</sup> Lingling Zheng ,<sup>4</sup> Ning He,<sup>1</sup> Ruwei Hu <sup>1</sup>

**To cite:** Wu J, Liu RQ, Shi L, *et al.* Association between resident status and patients' experiences of primary care: a cross-sectional study in the Greater Bay Area, China. *BMJ Open* 2022;**12**:e055166. doi:10.1136/bmjopen-2021-055166

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2021-055166>).

Received 04 July 2021  
Accepted 27 February 2022



© Author(s) (or their employer(s)) 2022. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ.

For numbered affiliations see end of article.

## Correspondence to

Dr Ruwei Hu;  
[huruwei@mail.sysu.edu.cn](mailto:huruwei@mail.sysu.edu.cn)

## ABSTRACT

**Objectives** Patients' experiences are important part of health services quality research, but it's still unclear whether patients' experiences are influenced by resident status. This study aimed to evaluate the association between resident status and patients' primary care experiences with the focus on migrants vs local residents.

**Design** A cross-sectional study using multistage cluster random sampling was conducted from September to November 2019. The data were analysed using general linear models.

**Setting** Six community health centres in Guangzhou, China.

**Participants** 1568 patients aged 20 years or older.

**Main outcome measures** Patients' primary care experiences were assessed using the Primary Care Assessment Tool. The 10 domains included in Primary Care Assessment Tool (PCAT) refers to first contact-utilisation, first contact-access, ongoing care, coordination (referral), coordination (information), comprehensiveness (services available), comprehensiveness (services provided), family-centredness, community orientation and cultural competence from patient's perspective.

**Results** 1568 questionnaires were analysed. After adjusting for age, sex, education, annual family income, self-perceived health status, chronic condition, annual medical expenditure and medical insurance, the PCAT total scores of the migrants were significantly lower than those of local residents ( $\beta=-0.128$ ; 95% CI  $-0.218$  to  $-0.037$ ). Migrants had significantly lower scores than local residents in first contact utilisation ( $\beta=-0.245$ ; 95% CI  $-0.341$  to  $-0.148$ ), ongoing care ( $\beta=-0.175$ ; 95% CI  $-0.292$  to  $-0.059$ ), family-centredness ( $\beta=-0.112$ ; 95% CI  $-0.225$  to  $0.001$ ), community orientation ( $\beta=-0.176$ ; 95% CI  $-0.286$  to  $-0.066$ ) and cultural competence ( $\beta=-0.270$ ; 95% CI  $-0.383$  to  $-0.156$ ), respectively.

**Conclusion** Primary care experiences of migrants were significantly worse off than those of local residents, especially in terms of primary care utilisation, continuity and cultural competence. Given the wide disparity in primary care experiences between migrants and local residents, Chinese healthcare system reform should focus on improving quality of primary care services for migrants, overcoming language barriers and creating patient-centred primary care services.

## Strengths and limitations of this study

- This study adopted an internationally established scale, Primary Care Assessment Tool, which has been recognised and used by many countries.
- The assessment of primary care experiences plays an important role in improving primary care services because it helps family doctors and community health centres to better understand patients' primary health experiences and needs, and improve the quality of primary care services.
- Some potential confounding factors influencing the association of resident status and patients' primary care experiences might have been neglected, such as the duration of residence.
- This study was conducted in Guangzhou and may have resulted in selection bias and lack of generalisability. Further studies should be carried out in more areas across China.

## INTRODUCTION

More than 247 million people migrated from one country to another in 2013, and over 750 million migrated within countries that same year.<sup>1</sup> Migrants are more likely to get infectious and non-infectious diseases due to their living and working conditions.<sup>2-3</sup> The United Nations 2030 Agenda for the Sustainable Development calls for empowering vulnerable groups such as internal migrants to reduce inequalities.<sup>4</sup>

The WHO has declared that the achievement of the highest attainable standard of health should become one of the fundamental rights of every human being.<sup>5</sup> Achieving equity in primary care is the most important thing to assure equity in health because primary care can meet people's most basic medical needs and is widely recognised as an approach to realising health for all.<sup>6-7</sup> Many countries have taken measures to strengthen their primary care systems.<sup>8-9</sup> During the COVID-19 emergency, primary care services provided by community health centres



(CHCs) have an important role in controlling the spread of the virus and providing comprehensive and continuity care for patients.<sup>10 11</sup>

As of 2019, China's internal migrant population stood at 236 million. Internal migrant is a type of resident status and refer to those who live outside their places of household registration in China.<sup>12</sup> Household registration, or Hukou, was established in 1955 in order to regulate population mobility and serve as a basis for allocating resources to specific population groups.<sup>13</sup> Access to local welfare benefits, including education, job opportunities, housing in particular, healthcare services, remain tied to resident status.<sup>14–17</sup> This kind of inequality has negatively affected the health status of migrants.<sup>18</sup>

Earlier studies have shown that at the beginning of the 21st century, migrants suffered from inadequate allocation of health resources in terms of access to public health services in China.<sup>19 20</sup> Primary care services were unlikely to cover migrants of lower socioeconomic status and across provincial boundaries. In January 2009, the Chinese government issued the Opinions on Deepening the Reform of the Health System and launched a new round of health system reform. However, despite this effort, the migrants still made less use of community health services.<sup>21</sup>

To address this issue and promote health equity in primary care system, China initiated the 'Equal Access to Public Health Services among Migrants' policy in 2013, which proposed measures to provide primary care services to meet migrants' needs.<sup>22</sup> Moreover, the Healthy China 2030 initiative has called for promoting the equalisation of primary care services, especially between migrants and local residents.

Patients' experiences, clinical effectiveness and patient safety are the three pillars of quality in medical services.<sup>23</sup> And, the quality of primary care services is usually reflected in patients' primary care experiences. The former evaluates quality from the demand side, while the latter two assess quality from the supply side and the regulatory side. Demand side research usually focuses on the determinants of patient choices.<sup>24 25</sup> Our study aimed to change patients' perception, choice and behaviour of medical treatment by improving patients' experiences. We employed patients' experiences as main indicators of quality of primary care in the study. This kind of study could provide valuable information on the quality of primary care services and assist policy makers, healthcare providers and the public in assessing and improving targeted quality initiatives.<sup>26</sup>

To evaluate patients' experiences, the John Hopkins Primary Care Policy Centre developed and validated the Primary Care Assessment Tool (PCAT) which has been applied in many countries and has shown good reliability and validity in China.<sup>27–31</sup>

Prior researches have either focused on migrants' health status, needs, and utilisation of primary care services in some countries, particularly in Europe or assessed migrants' primary care experiences and explored related

influencing factors.<sup>32–38</sup> However, the studies comparing the differences of primary care experiences between migrants and local residents have been so few that it is difficult to determine if there were differences in the quality of primary care received by migrants vs local residents. One study conducted in Guangzhou indicated that migrants' and local residents' primary care experiences, as assessed by PCAT, seemed equal.<sup>30</sup> But, a Shenzhen study used self-administered questionnaire to assess the quality of the primary care and found that for migrants, the care was less satisfactory than that for local residents in terms of the attitudes towards healthcare workers and waiting time.<sup>39</sup>

Our previous studies in the Greater Bay Area found an association between patients' experiences with usual source of care, types of healthcare facilities, and the quality of primary care services.<sup>27 31</sup> Thus, based on our previous findings, we hypothesised that resident status may affect the experiences of patients with CHC as usual source of care. We evaluated the primary care experiences of migrants and local residents in Guangzhou, the core city of the Greater Bay Area, using the well-established and reliable PCAT and explored the association between patients' resident status and their primary care experiences.

## METHODS

### Design and participants

We conducted a cross-sectional survey of adult patients at six CHCs in Guangzhou, China, using multistage cluster random sampling from September to November 2019. First, we selected all the four centre-urban districts: Liwan, Yuexiu, Tianhe and Haizhu, and randomly selected two communities from Tianhe and Haizhu district and one community from Yuexiu and Liwan district. Then, one family doctor team was randomly selected to help us recruit patients. Finally, patients completed the paper or online questionnaire on-site with the help of trained professional investigators. Patients older than 20 years and visited a CHC at least once before were enrolled in the survey. Patients were excluded if they had severe mental health disorder or could not understand the questionnaire. Prior to every survey, each patient signed an informed consent form.

### Measures

Patients' primary care experiences were measured by the Primary Care Assessment Tool (PCAT). A series of scales of PCAT were developed by the Primary Care Policy Centre of Johns Hopkins University, measuring the extent and quality of primary care services in provider settings.<sup>40</sup> We used an unmodified Chinese language version of the original simplified PCAT scale which had a reliability coefficient of 0.963, with an acceptable test-retest reliability coefficient of 0.7 (accepted for publication elsewhere). The PCAT included the following 10 domains: first contact utilisation, first contact access,

ongoing care, coordination (referral), coordination (information), comprehensiveness (services available), comprehensiveness (services provided), family-centredness, community orientation and cultural competence. Each domain contained 3–5 items. Each item was rated on a 4-point Likert scale (1=never; 2=sometimes; 3=often; 4=always). The Don't know/Not sure response and missing data were assigned a neutral value of 2.5. The score of each domain was the average of the values for all the items under that domain. The total score of PCAT was derived by averaging the values for all domains.<sup>41</sup> The higher the score, the better the experiences were.

### Covariates

In our study, hukou status was considered a key independent variable, defined as local residents (hukou registered in Guangzhou) or migrants (hukou registered in areas other than Guangzhou). Moreover, we collected individual information including sociodemographic and health-related characteristics with a self-administered questionnaire. Sociodemographic information consisted of age (years), sex (male vs female), annual average household income (¥) and education level (uneducated, primary school, middle school, high school, college or above). Health-related characteristics included self-perceived health status (good, average or bad), chronic condition (yes vs no), diabetes condition (yes vs no), hypertension condition (yes vs no), type of health insurance (medical insurance for urban and rural residents, medical insurance for employee, business insurance and so on) and annual medical expenditure (¥).

### Statistical analysis

The quantitative variables were expressed as means $\pm$ SD and median (IQR), and the categorical variables were expressed as absolute numbers and percentages. The association between resident status and patients' primary care experiences was evaluated by the general linear model. In each domain, two general linear model were used. Model I included only resident status, while model II controlled for the covariates including age, sex, education, annual household income, self-perceived health status, chronic condition, annual medical expenditure and medical insurance.<sup>27 29 41–46</sup> The dependent variables used in the models were PCAT score, First contact-utilisation score, First contact-access score, ongoing care score, coordination (referral) score, coordination (information) score, comprehensiveness (services available) score, comprehensiveness (services provided) score, family-centredness score, community orientation score and cultural competence score. The resident status effect was reported using adjusted beta with 95% CIs where local residents were regarded as the reference group. Two-side  $p < 0.05$  was considered significant. All statistical analyses were performed using IBM SPSS V.25.0.

### Patients and public involvement

Patients or the public were not involved in the design, conduct, reporting or dissemination plans of our research.

## RESULTS

### Baseline characteristics of patients

A total of 1776 PCAT questionnaires were sent out and 1744 were collected, with a response rate of 98.2%. Incomplete, illogical and repeated questionnaires were considered invalid. After data cleaning, 1568 questionnaires were valid with an effective rate of 89.9%. As shown in [table 1](#), most (62.8%) of patients were 60 years or older and 55.8% were female. 11.9% of patients were migrants and 88.1% were local residents. Compared with local residents, lower proportions of migrants were aged 60 or over (65.4% vs 43.5%) or had annual household income below 100000 RMB (30.6% vs 23.4%). More migrants reported their health status as good (37.3% vs 51.1%).

### Patients' experiences

[Table 2](#) shows the mean value  $\pm$ SD and median (IQR) of the PCAT scores of migrants and local residents, respectively. Among all domains, the score of first contact-access domain was the lowest with a mean ( $\pm$ SD) of 2.97 ( $\pm$ 0.74) and a median of 3.00 (range 2.50–3.75). The difference of the total PCAT score between migrants and local residents was statistically significant (Mann-Whitney test,  $p < 0.001$ ), as well as scores in all domains. As shown in [figure 1](#), migrants scored lower than local residents across all domains on the median indicators. See online supplemental appendix 1 for details.

### Association between resident status and patients' experiences

[Table 3](#) demonstrates the association between resident status and PCAT score after adjusting for confounding variables. For total PCAT score, migrants had on average an estimated 0.128 points lower score than local residents (95% CI  $-0.218$  to  $-0.037$ ). Additionally, migrants scored significantly lower than local residents in first contact-utilisation ( $\beta = -0.245$ , 95% CI  $-0.341$  to  $-0.148$ ,  $p < 0.001$ ), ongoing care ( $\beta = -0.175$ , 95% CI  $-0.292$  to  $-0.059$ ,  $p = 0.003$ ), family-centredness ( $\beta = -0.112$ , 95% CI  $-0.225$  to  $0.001$ ,  $p < 0.050$ ), community orientation ( $\beta = -0.176$ , 95% CI  $-0.286$  to  $-0.066$ ,  $p = 0.002$ ) and cultural competence ( $\beta = -0.270$ , 95% CI  $-0.383$  to  $-0.156$ ,  $p < 0.001$ ), respectively.

## DISCUSSION

In this study, we explored the differences in primary care experiences between migrants and local residents. Migrants' primary care experiences scores were significantly lower than local residents' in total and in the following domains: first contact utilisation, ongoing care, community orientation, family-centredness and cultural

**Table 1** Sociodemographic and health characteristics of participants N (%)

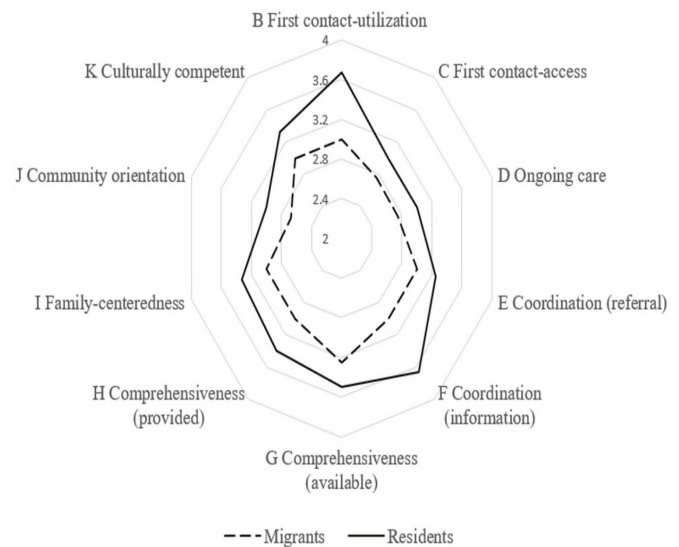
	Total	Local residents	Migrants	P value
	1568 (100)	1382 (88.1)	186 (11.9)	
Age				<0.001
20–25	20 (1.3)	13 (0.9)	7 (3.8)	
25–30	55 (3.5)	35 (2.5)	19 (10.2)	
31–40	127 (8.1)	99 (7.2)	28 (15.1)	
41–50	130 (8.3)	110 (8.0)	21 (11.3)	
51–60	251 (16.0)	221 (16.0)	30 (16.1)	
> 60	985 (62.8)	904 (65.4)	81 (43.5)	
Sex				0.451
Male	693 (44.2)	606 (43.8)	87 (46.8)	
Female	875 (55.8)	776 (56.2)	99 (53.2)	
Education				0.004
Uneducated	15 (1.0)	11 (0.8)	4 (2.2)	
Primary school and below	202 (12.9)	168 (12.2)	34 (18.3)	
Middle school	408 (26.0)	363 (26.3)	45 (24.2)	
High school	537 (34.2)	491 (35.5)	46 (24.7)	
College or above	406 (25.9)	349 (25.3)	57 (30.6)	
Annual household income				0.078
<US\$100 000	380 (24.2)	323 (23.4)	57 (30.6)	
US\$100 000–US\$150 000	347 (22.1)	302 (21.9)	45 (24.2)	
US\$150 000–US\$210 000	434 (27.7)	391 (28.3)	43 (23.1)	
≥US\$210 000	407 (26.0)	366 (26.5)	41 (22.0)	
Self-perceived health status				0.001
Fair	93 (5.9)	80 (5.8)	13 (7.0)	
Average	865 (55.2)	787 (56.9)	78 (41.9)	
Good	610 (38.9)	515 (37.3)	95 (51.1)	
Chronic condition				<0.001
No	430 (27.4)	340 (24.6)	90 (48.4)	
Yes	1138 (72.6)	1042 (75.4)	96 (51.6)	
Diabetes				0.016
No	1150 (73.3)	1000 (72.4)	150 (80.6)	
Yes	418 (26.7)	382 (27.6)	36 (19.4)	
Hypertension				<0.001
No	685 (43.7)	562 (40.7)	123 (66.1)	
Yes	883 (56.3)	820 (59.3)	63 (33.9)	
Medical insurance				<0.001
Urban and rural residents	226 (14.4)	161 (11.6)	65 (34.9)	
Employee resident	1301 (83.0)	1192 (86.3)	109 (58.6)	
Business insurance and so on	41 (2.6)	29 (2.1)	12 (6.5)	
Annual medical expenditure				0.326
<800	358 (22.8)	325 (23.5)	33 (17.7)	
800–1800	410 (26.1)	360 (26.0)	50 (26.9)	
1800–3000	241 (15.4)	212 (15.3)	29 (15.6)	
≥3000	559 (35.7)	485 (35.1)	74 (39.8)	

P value is based on  $\chi^2$  test.

**Table 2** The scores of PCAT of participants

Domains	Total		Local residents		Migrant		Total		Local residents		Migrant		P value*
	Mean±SD	Median (IQR)	Mean±SD	Median (IQR)	Mean±SD	Median (IQR)	Mean±SD	Median (IQR)	Mean±SD	Median (IQR)	Mean±SD	Median (IQR)	
First contact utilisation	3.31±0.65	3.67 (3.00–4.00)	3.36±0.64	3.67 (3.00–4.00)	2.95±0.67	3.00 (2.50–3.75)	2.97±0.74	3.00 (2.50–3.75)	3.31±0.65	3.67 (3.00–4.00)	2.95±0.67	3.00 (2.50–3.75)	<0.001
First contact access	2.97±0.74	3.00 (2.50–3.75)	3.01±0.75	3.00 (2.50–3.75)	2.70±0.64	3.00 (2.50–3.75)	3.08±0.78	3.00 (2.50–3.75)	3.01±0.75	3.00 (2.50–3.75)	2.70±0.64	2.75 (2.25–3.25)	<0.001
Ongoing care	3.08±0.78	3.00 (2.50–4.00)	3.13±0.78	3.00 (2.50–4.00)	2.71±0.68	3.00 (2.50–4.00)	3.20±0.72	3.00 (2.50–4.00)	3.13±0.78	3.00 (2.50–4.00)	2.71±0.68	2.75 (2.50–3.25)	<0.001
Coordination (referral)	3.20±0.72	3.25 (2.63–4.00)	3.22±0.73	3.25 (2.63–4.00)	2.96±0.64	3.00 (2.50–3.25)	3.31±0.74	3.00 (2.50–3.25)	3.22±0.73	3.00 (2.50–3.25)	2.96±0.64	3.00 (2.50–3.25)	<0.001
Coordination (information)	3.31±0.74	3.67 (2.67–4.00)	3.34±0.75	3.67 (2.67–4.00)	3.11±0.70	3.00 (2.67–4.00)	3.31±0.74	3.00 (2.67–4.00)	3.34±0.75	3.00 (2.67–4.00)	3.11±0.70	3.00 (2.67–4.00)	<0.001
Comprehensiveness (services available)	3.36±0.67	3.50 (2.81–4.00)	3.37±0.68	3.50 (2.81–4.00)	3.24±0.56	3.25 (3.00–3.81)	3.23±0.70	3.40 (2.60–3.60)	3.37±0.68	3.25 (3.00–3.81)	3.24±0.56	3.25 (3.00–3.81)	<0.001
Comprehensiveness (services provided)	3.23±0.70	3.40 (2.60–4.00)	3.26±0.71	3.40 (2.60–4.00)	3.03±0.59	3.00 (2.60–3.60)	3.20±0.75	3.30 (2.67–4.00)	3.26±0.71	3.00 (2.60–3.60)	3.03±0.59	3.00 (2.60–3.60)	<0.001
Family centredness	3.20±0.75	3.33 (2.67–4.00)	3.24±0.75	3.33 (2.67–4.00)	2.91±0.68	3.00 (2.33–3.67)	3.04±0.72	3.00 (2.67–3.67)	3.24±0.75	3.00 (2.67–3.67)	2.91±0.68	3.00 (2.33–3.67)	<0.001
Community orientation	3.04±0.72	3.00 (2.67–3.67)	3.08±0.73	3.00 (2.67–3.67)	2.74±0.63	2.67 (2.33–3.00)	3.22±0.76	3.33 (2.67–4.00)	3.08±0.73	3.00 (2.67–3.67)	2.74±0.63	2.67 (2.33–3.00)	<0.001
Cultural competence	3.22±0.76	3.33 (2.67–4.00)	3.27±0.75	3.33 (2.67–4.00)	2.83±0.73	3.00 (2.33–3.42)	3.19±0.62	3.24 (2.67–3.90)	3.27±0.75	3.00 (2.33–3.42)	2.83±0.73	3.00 (2.33–3.42)	<0.001
PCAT (total average)	3.19±0.62	3.19 (2.67–3.89)	3.23±0.62	3.19 (2.67–3.89)	2.91±0.48	2.93 (2.61–3.36)			3.23±0.62	2.93 (2.61–3.36)	2.91±0.48	2.93 (2.61–3.36)	<0.001

\*P value is based on Mann-Whitney test. PCAT, Primary Care Assessment Tool.



**Figure 1** The scores of PCAT of participants (median). PCAT, Primary Care Assessment Tool.

competence after adjusting for patient sociodemographic and health characteristics.

The finding that migrants had worse primary care experiences is congruent with some published studies elsewhere.<sup>47</sup> But, another research demonstrated that migrants were equal to local residents in terms of overall experiences of primary care.<sup>30</sup> The inconsistency could have resulted from differences between studies in their inclusion and exclusion criteria for patients and the sample size.

The migrants' lower scores for First contact-utilisation revealed that primary care institutions haven't been acting as gatekeepers for hospital services. Migrants seemed less likely than local residents to know of or be able to use primary care services.<sup>38 44 48</sup> But, a recent study in Shenzhen showed that migrants were more inclined to consider CHCs as their first point of contact.<sup>39</sup> The difference might have been due to Shenzhen's Medical Insurance System for Migrant Employees which required employed migrants to contact one of Shenzhen's 611 CHCs for initial care. Establishing a medical insurance system for migrants that encourages them to use CHCs as their first-contact institution and improving the medical services of those CHCs could be an effective policy option.

Family doctors should also embrace the concept of taking care of migrants. Although the difference in first contact-access domain scores between migrants and local residents was not statistically significant, it is worth noting that this was the lowest score for both groups. A previous study showed that, compared with local residents, fewer migrants were entitled to sick pay in China.<sup>49</sup> This implies that after-hour primary care needs to be expanded. In similar circumstances, a Dutch primary care physicians' cooperative reorganised its organisational model to provide after-hour care that satisfied both the professionals and their patients.<sup>50</sup> Whether this model can be applied in China requires further investigation.

**Table 3** Association between resident status and patients' experiences

Domains	Unadjusted mean differences (95% CI)	P value	Adjusted* mean differences (95% CI)	P value†
First contact-utilisation	-0.407 (-0.505 to 0.310)	<0.001	-0.245 (-0.341 to 0.148)	<0.001
First contact-access	-0.303 (-0.416 to 0.191)	<0.001	-0.085 (-0.196 to 0.025)	0.128
Ongoing care	-0.417 (-0.535 to 0.298)	<0.001	-0.175 (-0.292 to 0.059)	0.003
Coordination (referral)	-0.262 (-0.396 to 0.127)	<0.001	-0.040 (-0.174 to 0.095)	0.563
Coordination (information)	-0.225 (-0.339 to 0.112)	<0.001	-0.033 (-0.144 to 0.079)	0.565
Comprehensiveness (services available)	-0.136 (-0.238 to 0.034)	0.009	-0.011 (-0.115 to 0.093)	0.836
Comprehensiveness (services provided)	-0.222 (-0.329 to 0.115)	<0.001	-0.045 (-0.150 to 0.060)	0.401
Family-centredness	-0.322 (-0.436 to 0.208)	<0.001	-0.112 (-0.225 to 0.001)	0.050
Community orientation	-0.332 (-0.441 to 0.223)	<0.001	-0.176 (-0.286 to 0.066)	0.002
Cultural competence	-0.441 (-0.556 to 0.327)	<0.001	-0.270 (-0.383 to 0.156)	<0.001
PCAT (total average)	-0.311 (-0.404 to 0.218)	<0.001	-0.128 (-0.218 to 0.037)	0.006

The bold values mean statistically significant P value of adjusted mean differences. However, after discussion, we removed the bold mark, which will not affect the results of the article.

\*Adjusted for age, sex, education, annual household income, self-perceived health status, chronic condition, annual medical expenditure and medical insurance.

†Association was conducted with general linear model, with local residents as the reference group.

PCAT, Primary Care Assessment Tool.

In the ongoing care domain, migrants scored significantly lower than local residents in our study. This finding was in line with a study in Europe showing that migrants were likely to report less continuity of care than native patients.<sup>51</sup> This was perhaps due to migrants having more negative patient–doctor communications, less connection to the community and lacking of awareness of health behaviours.<sup>52 53</sup> Interpersonal continuity has been associated with improved preventive care and reduced hospitalisation.<sup>54</sup> Family doctors should classify migrants as an important subpopulation to serve, actively interact with them, know well their health status, and give correspondingly appropriate care. When migrants move to another community, previous CHCs should share migrants' medical histories and other information with current CHCs.

In this study, the difference between migrants and local residents in terms of Cultural competence domain was significant. Cultural differences are important barriers to accessing healthcare services not only for internal migrants but also for international migrants, which has long been studied and discussed by scholars.<sup>55 56</sup> Barriers to effective and equitable healthcare can result from linguistic differences between patients and doctors.<sup>57</sup> It is crucial to accurately convey risk factors of disease when communicating the details of a diagnosis or treatment.<sup>58</sup> Hence, family doctors in Guangzhou should learn to speak in Mandarin, the national dialect, rather than rely on Cantonese, a local dialect. But dialect is just one aspect of culture, and the other aspects of culture, for example religion, may also influence migrants' primary care experiences. Further study should be conducted.

In addition, the migrants' primary care experiences were significantly worse off than local residents in the

family-centred care and community-orientation domains. A large number of studies have shown that Family-centred care was an important way of meeting the needs of family members.<sup>59</sup> Community-oriented care takes into account the healthcare needs of not only the patients and their families but also local residents in the community. The likely reason for migrants' worse experiences in the community-oriented care domain might be due to work overload by family doctors which was a major barrier to regularly provide other community-oriented services for migrants or to visit patients' homes. The migrants' weak connection with the community might be another barrier. A recent study showed that the social integration of migrants was often poor, which could affect their community health services experiences.<sup>60</sup>

Therefore, to close the gap between migrants and local residents, policy-makers should accelerate reform of the household registration system, deepen reform of the healthcare system and focus on improving migrants' primary care experiences, especially in terms of utilisation, continuity and cultural competence. Importantly, policies should be made to mitigate the impacts of cultural differences and language barriers on migrants seeking medical services.

By examining the association between resident status and patients' primary care experiences in urban area using an internationally established PCAT scale, this study was significant for health promotion in vulnerable groups. However, there were still a number of limitations with our study. The study did not capture all potentially significant confounding factors influencing the association of resident status and patients' primary care experiences. An example was the type and duration of residence. A local resident born in local and a local resident not born in

local could have different experiences of primary care. Similarly, the duration of local residence might also matter. A migrant with lengthy local residence might have better assimilated into local culture than migrants with short local residence. Although we tried to minimise the bias by adjusting the sociodemographic and health characteristics, our study still showed a significant relationship between resident status and patients' experiences in cultural competence. Another limitation of the study was its lack of representativeness since the study was carried out in one metropolitan city of China. Further studies should be carried out in more cities and regions across China.

## CONCLUSION

In conclusion, this study indicated that migrants' primary care experiences were worse off than those of local residents in Guangzhou, China, providing evidence for further study about quality of primary care at a national level. There is still a long way to go to achieve the goal of equitable and accessible primary care services for all in Healthy China 2030.

Furthermore, the findings could also be relevant to America, Australia, Europe and other countries that accommodate many migrants with different cultures. Promoting the equality between migrants and local residents in China is significant for achieving the goal of health for all and improving global equity.

## Author affiliations

<sup>1</sup>Department of Health Management, Sun Yat-Sen University School of Public Health, Guangzhou, Guangdong, China

<sup>2</sup>Guangdong Provincial Engineering Technology Research Center of Environmental Pollution and Health Risk Assessment, Department of Occupational and Environmental Health, Sun Yat-Sen University School of Public Health, Guangzhou, Guangdong, China

<sup>3</sup>Department of Health Policy & Management, School of Public Health, Johns Hopkins University, Baltimore, Maryland, USA

<sup>4</sup>Global Health Research Center, Guangdong Provincial People's Hospital, Guangdong Academy of Medical Sciences, Guangzhou, Guangdong, China

**Acknowledgements** The authors would like to thank six family doctors' teams from the HHG, HL, JH, LD, LH, SY community health centres in the four centre-urban districts for helping recruit patients and supporting scientific research.

**Contributors** RH conceptualised the study, arranged the field investigation, collected the data and revised the manuscript. RH was the study's PI and, as such, had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. JW collected and analysed the data, and drafted the manuscript. RL collected and analysed the data, and revised the manuscript. LS conceptualised the study and revised the manuscript. LZ revised the manuscript. NH participated in the statistical analysis. RH is guarantor.

**Funding** This work was supported by grants to Dr. Ruwei Hu from the National Social Science Found of China (no. 17BGL190) "Research on Government Regulation of Medical Union with Core Part of Community Health Service Management"

**Competing interests** None declared.

**Patient and public involvement** Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

**Patient consent for publication** Not applicable.

**Ethics approval** The Human Body Research Committee of Sun Yat-sen University approved this study's investigation procedure in accordance with the Helsinki

Declaration-Ethical principles of Medical Research involving the Human body (No. IRB2014.9). Participants gave informed consent to participate in the study before taking part.

**Provenance and peer review** Not commissioned; externally peer reviewed.

**Data availability statement** No data are available.

**Supplemental material** This content has been supplied by the author(s). It has not been vetted by BMJ Publishing Group Limited (BMJ) and may not have been peer-reviewed. Any opinions or recommendations discussed are solely those of the author(s) and are not endorsed by BMJ. BMJ disclaims all liability and responsibility arising from any reliance placed on the content. Where the content includes any translated material, BMJ does not warrant the accuracy and reliability of the translations (including but not limited to local regulations, clinical guidelines, terminology, drug names and drug dosages), and is not responsible for any error and/or omissions arising from translation and adaptation or otherwise.

**Open access** This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

## ORCID iDs

Lingling Zheng <http://orcid.org/0000-0002-7305-2253>

Ruwei Hu <http://orcid.org/0000-0002-4651-3456>

## REFERENCES

- 1 World bank. *leveraging economic migration for development : a briefing for the world bank board*. Washington, DC, 2019.
- 2 Sadarangani SP, Lim PL, Vasoo S. Infectious diseases and migrant worker health in Singapore: a receiving country's perspective. *J Travel Med* 2017;24. doi:10.1093/jtm/tax014. [Epub ahead of print: 01 07 2017].
- 3 Agyemang C, van den Born B-J. Non-Communicable diseases in migrants: an expert review. *J Travel Med* 2019;26. doi:10.1093/jtm/tay107. [Epub ahead of print: 01 Feb 2019].
- 4 United Nations. *Transforming our world: the 2030 agenda for sustainable development*. New York, 2015.
- 5 Constitution of the world Health organization. The International health conference; 1946 July 22; New York, America.
- 6 Sawin G, O'Connor N. Primary care transformation. *Prim Care* 2019;46:549-60.
- 7 Sumriddetchkajorn K, Shimazaki K, Ono T, et al. Universal health coverage and primary care, Thailand. *Bull World Health Organ* 2019;97:415-22.
- 8 Chen A, Feng S, Zhang L, et al. Comparison of Patients' Perceived Quality of Primary Care Between Urban and Rural Community Health Centers in Guangdong, China. *Int J Environ Res Public Health* 2020;17:4898.
- 9 Kreindler SA, Metge C, Struthers A, et al. Primary care reform in Manitoba, Canada, 2011-15: balancing accountability and acceptability. *Health Policy* 2019;123:532-7.
- 10 de Nicolás Jiménez JM, Blázquez Recio LM, Fabregat Domínguez MT, et al. [COVID-19 and assistance effort in Primary Care]. *Aten Primaria* 2020;52:588-90.
- 11 Park S, Elliott J, Berlin A, et al. Strengthening the UK primary care response to covid-19. *BMJ* 2020;370:m3691.
- 12 Goodkind D, West LA. China's Floating Population: Definitions, Data and Recent Findings. *Urban Stud* 2002;39:2237-50.
- 13 Jan C, Zhou X, Stafford RS. Improving the health and well-being of children of migrant workers. *Bull World Health Organ* 2017;95:850-2.
- 14 Li L, Li S-ming, Chen Y. Better City, better life, but for whom?: the hukou and resident card system and the consequential citizenship stratification in Shanghai. *City, Culture and Society* 2010;1:145-54.
- 15 XG W, Treiman DJ. Inequality and equality under Chinese socialism: the Hukou system and intergenerational occupational mobility. *Am J Sociol* 2007;113:415-45.
- 16 Wu X, Treiman DJ. The household registration system and social stratification in China: 1955-1996. *Demography* 2004;41:363-84.
- 17 Xi S, Song Y, Li X, et al. Local-Migrant gaps in healthcare utilization between older migrants and local residents in China. *J Am Geriatr Soc* 2020;68:1560-7.
- 18 Chaudhuri IN. Community mobilization for slum upgrading through sanitation in Roma informal settlements in the Paris region. *Front Public Health* 2017;5:213.



- 19 Jin-wei L. [Situation Assessment and Countermeasures on the Equalization of Basic and Public Health Services between Urban and Rural Areas in Beijing]. *Chinese Health Economics* 2011;30:42–4.
- 20 j P, Jin-quan C, Zhi-guang Z. [Supply and Guarantee of Community Health Service for Floating Population in Shenzhen]. *Medicine And Society* 2005;18:1–3.
- 21 Zhang J, Lin S, Liang D, *et al.* Public health services utilization and its determinants among internal migrants in China: evidence from a nationally representative survey. *Int J Environ Res Public Health* 2017;14:1002.
- 22 Wang Y, Jing Z, Ding L, *et al.* Socioeconomic inequity in inpatient service utilization based on need among internal migrants: evidence from 2014 national cross-sectional survey in China. *BMC Health Serv Res* 2020;20.
- 23 Doyle C, Lennox L, Bell D. A systematic review of evidence on the links between patient experience and clinical safety and effectiveness. *BMJ Open* 2013;3:e001570.
- 24 Li W, Gan Y, Dong X, *et al.* Gatekeeping and the utilization of community health services in Shenzhen, China. *Medicine* 2017;96:e7719.
- 25 Yip W, Wang H, Liu Y. Determinants of patient choice of medical provider: a case study in rural China. *Health Policy Plan* 1998;13:311–22.
- 26 Draper M, Cohen P, Buchan H. Seeking consumer views: what use are results of hospital patient satisfaction surveys? *Int J Qual Health Care* 2001;13:463–8.
- 27 Hu R, Liao Y, Du Z, *et al.* Types of health care facilities and the quality of primary care: a study of characteristics and experiences of Chinese patients in Guangdong Province, China. *BMC Health Serv Res* 2016;16:335.
- 28 Aoki T, Yamamoto Y, Fukuhara S. Comparison of primary care experience in hospital-based practices and community-based office practices in Japan. *Ann Fam Med* 2020;18:24–9.
- 29 Dullie L, Meland E, Mildestvedt T, *et al.* Quality of primary care from patients' perspective: a cross sectional study of outpatients' experience in public health facilities in rural Malawi. *BMC Health Serv Res* 2018;18:872.
- 30 Zhong C, Kuang L, Li L, *et al.* Equity in patient experiences of primary care in community health centers using primary care assessment tool: a comparison of rural-to-urban migrants and urban Locals in Guangdong, China. *Int J Equity Health* 2018;17:51.
- 31 Du Z, Liao Y, Chen C-C, *et al.* Usual source of care and the quality of primary care: a survey of patients in Guangdong Province, China. *Int J Equity Health* 2015;14.
- 32 Lebano A, Hamed S, Bradby H, *et al.* Migrants' and refugees' health status and healthcare in Europe: a scoping literature review. *BMC Public Health* 2020;20:1039.
- 33 Graetz V, Rechel B, Groot W, *et al.* Utilization of health care services by migrants in Europe—a systematic literature review. *Br Med Bull* 2017;121:5–18.
- 34 Shakya P, Tanaka M, Shibamura A, *et al.* Nepalese migrants in Japan: what is holding them back in getting access to healthcare? *PLoS One* 2018;13:e0203645.
- 35 Sung S, Park H-A. Perceived cultural differences in healthcare for foreign patients visiting South Korea: tool development and measurement. *BMC Health Serv Res* 2019;19:197.
- 36 Zheng L, Hu R, Dong Z, *et al.* Comparing the needs and utilization of health services between urban residents and rural-to-urban migrants in China from 2012 to 2016. *BMC Health Serv Res* 2018;18:717.
- 37 Aoki T, Yamamoto Y, Ikenoue T, *et al.* Social isolation and patient experience in older adults. *Ann Fam Med* 2018;16:393–8.
- 38 Zeng J, Shi L, Zou X, *et al.* Rural-to-Urban Migrants' Experiences with Primary Care under Different Types of Medical Institutions in Guangzhou, China. *PLoS One* 2015;10:e0140922.
- 39 Li H, Chung RY-N, Wei X, *et al.* Comparison of perceived quality amongst migrant and local patients using primary health care delivered by community health centres in Shenzhen, China. *BMC Fam Pract* 2014;15:76.
- 40 Green LA. Science and the future of primary care. *J Fam Pract* 1996;42:119–22.
- 41 Zou Y, Zhang X, Hao Y, *et al.* General practitioners versus other physicians in the quality of primary care: a cross-sectional study in Guangdong Province, China. *BMC Fam Pract* 2015;16:134.
- 42 Wang W, Shi L, Yin A, *et al.* Primary care quality among different health care structures in Tibet, China. *Biomed Res Int* 2015;2015:1–8.
- 43 Wei X, Li H, Yang N, *et al.* Comparing quality of public primary care between Hong Kong and Shanghai using validated patient assessment tools. *PLoS One* 2015;10:e0121269.
- 44 Zhang L, Li J, Ma T, *et al.* Usual source of care and experiences with primary care among community health service centre patients in Changchun, China: a cross-sectional survey. *Health Soc Care Community* 2020;28:1979–88.
- 45 Cho Y, Chung H, Joo H, *et al.* Comparison of patient perceptions of primary care quality across healthcare facilities in Korea: a cross-sectional study. *PLoS One* 2020;15:e0230034.
- 46 Feng S, Shi L, Zeng J, *et al.* Comparison of primary care experiences in village clinics with different ownership models in Guangdong Province, China. *PLoS One* 2017;12:e0169241.
- 47 Castañeda H. Illegality as risk factor: a survey of unauthorized migrant patients in a Berlin clinic. *Soc Sci Med* 2009;68:1552–60.
- 48 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.
- 49 Hesketh T, Ye XJ, Li L, Jun YX, Lu L, *et al.* Health status and access to health care of migrant workers in China. *Public Health Rep* 2008;123:189–97.
- 50 Giesen P, Smits M, Huibers L, *et al.* Quality of after-hours primary care in the Netherlands: a narrative review. *Ann Intern Med* 2011;155:108–13.
- 51 Hanssens LGM, Detollenaere J, Hardyns W, *et al.* Access, treatment and outcomes of care: a study of ethnic minorities in Europe. *Int J Public Health* 2016;61:443–54.
- 52 Jansky M, Owusu-Boakye S, Nauck F. “An odyssey without receiving proper care” – experts' views on palliative care provision for patients with migration background in Germany. *BMC Palliat Care* 2019;18:8.
- 53 Chae D, Lee J, Asami K, *et al.* Experience of migrant care and needs for cultural competence training among public health workers in Korea. *Public Health Nurs* 2018;35:211–9.
- 54 Saultz JW, Lochner J. Interpersonal continuity of care and care outcomes: a critical review. *Ann Fam Med* 2005;3:159–66.
- 55 The Lancet public H. no public health without migrant health. *Lancet Public Health* 2018;3:e259.
- 56 Bhopal R. Unity in the fields of migration, ethnicity, race and health. *The Lancet Public Health* 2018;3:e13.
- 57 Jacobs E, Chen AHM, Karliner LS, *et al.* The need for more research on language barriers in health care: a proposed research agenda. *Milbank Q* 2006;84:111–33.
- 58 Meuter RFI, Gallois C, Segalowitz NS, *et al.* Overcoming language barriers in healthcare: a protocol for investigating safe and effective communication when patients or clinicians use a second language. *BMC Health Serv Res* 2015;15: ARTN 371.
- 59 Harrison TM. Family-Centered pediatric nursing care: state of the science. *J Pediatr Nurs* 2010;25:335–43.
- 60 Lin Y, Chu C, Chen Q, *et al.* Factors influencing utilization of primary health care by elderly internal migrants in China: the role of social contacts. *BMC Public Health* 2020;20.