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

JingLan Wu,1 RuQing Liu,2 Leiyu Shi,3 Lingling Zheng,4 Ning He,1 Ruwei Hu1

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 (β = −0.128; 95% CI −0.218 to −0.037). Migrants had significantly lower scores than local residents in first contact utilisation (β = −0.245; 95% CI −0.341 to −0.148), ongoing care (β = −0.175; 95% CI −0.292 to −0.059), family-centredness (β = −0.112; 95% CI −0.225 to 0.001), community orientation (β = −0.176; 95% CI −0.286 to −0.066) and cultural competence (β = −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.1 Migrants are more likely to get infectious and non-infectious diseases due to their living and working conditions.2 3 The United Nations 2030 Agenda for the Sustainable Development calls for empowering vulnerable groups such as internal migrants to reduce inequalities.4

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.5 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.6 7 Many countries have taken measures to strengthen their primary care systems.8 9 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.19,20 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.12 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.13 Access to local welfare benefits, including education, job opportunities, housing in particular, healthcare services, remain tied to resident status.11–17 This kind of inequality has negatively affected the health status of migrants.18 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.19,20 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.21 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.22 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.23 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 assess quality from the supply side and the regulatory side. Demand side research usually focuses on the determinants of patient choices.24–26 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.26

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.27–31

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.32–38 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.30 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.39

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.27,31 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.40 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, waiting time.39 in terms of the attitudes towards healthcare workers and waiting time.39

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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. 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±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. 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, 1588 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 ±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 (±SD) of 2.97 (±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 (β=−0.245, 95% CI −0.341 to −0.148, p<0.001), ongoing care (β=−0.175, 95% CI −0.292 to −0.059, p=0.003), family-centredness (β=−0.112, 95% CI −0.225 to 0.001, p=0.050, community orientation (β=−0.176, 95% CI −0.286 to −0.066, p=0.002) and cultural competence (β=−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 (%)  

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

P value is based on χ² test.
The finding that migrants had worse primary care experiences is congruent with some published studies elsewhere. But, another research demonstrated that migrants were equal to local residents in terms of overall experiences of primary care. 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. But, a recent study in Shenzhen showed that migrants were more inclined to consider CHCs as their first point of contact. 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.

Table 2  The scores of PCAT of participants

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

*P value is based on Mann-Whitney test.

PCAT, Primary Care Assessment Tool.

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The scores of PCAT of participants (median).

![Figure 1](http://bmjopen.bmj.com/ BMJ Open: first published as 10.1136/bmjopen-2021-055166 on 25 March 2022. Downloaded from http://bmjopen.bmj.com/)

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communicating the details of a diagnosis or treatment. It is crucial to accurately convey risk factors of disease when linguistic differences between patients and doctors. It to effective and equitable healthcare can result from experiences. Further study should be conducted.

Further, religion, may also influence migrants’ primary care experiences. For example, the type and duration of residence. A local resident born in local and a local resident not born in the community, previous CHCs should share migrants’ experiences, especially in terms of utilisation. 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 the community. 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. 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.

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

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

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

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.
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.

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Contributors

RH conceptualised the study, arranged the field investigation, collected the data and revised the manuscript. RW 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. LC collected and analysed the data, and revised the manuscript. LZ conceptualised the study and revised the manuscript. JNW participated in the statistical analysis. RH is guarantor.

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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

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