

Disparities in Healthcare Utilization in China: Do Gender and Migration Status Matter?

Jessie X. Fan · Ming Wen · Lei Jin ·
Guixin Wang

© Springer Science+Business Media, LLC 2012

Abstract Using a multi-stage cluster sampling approach, we collected healthcare and demographic data from 531 migrants and 529 local urban residents aged 16–64 in Shanghai, China. Logistic regressions were used to analyze the relationship between gender-migration status and healthcare utilization while controlling for predisposing, enabling and needs factors. Other things equal, female migrants and male locals had significantly lower actual healthcare utilization rates, compared to female locals. Female migrants were more likely to report “no money” as a reason for not seeking care, while male locals were more likely to report “self-medication” as a reason. Considering established gender differences in healthcare utilization, we conclude that female migrants as a group face the most healthcare access barriers among all groups.

Keywords China · Gender differences · Healthcare access · Healthcare utilization · Migrants

China’s healthcare system has undergone substantial reconstruction since the late 1970s, when the country began moving from a planned economy to a market economy. Both rural and urban healthcare systems have been affected, but in different ways (Shi 1993), resulting in further disparities in access to healthcare and health outcomes between urban and rural residents (Blumenthal and Hsiao 2005; Liu et al. 1999). A third group caught between the rural and urban healthcare systems is the rural-to-urban migrants.

Since the economic reform, millions of Chinese farmers have migrated from their villages and towns to cities, resulting in one of the largest internal migrations in China’s recent history (Hong et al. 2006; Zhang 2001). Internal migrants in China face social structural challenges that do not exist in most other countries. China’s household registration system (Hukou), established in the mid to late 1950s, is a legacy of the dualistic economy, serving as a highly effective measure of limiting migration from rural to urban areas. A person’s Hukou status is usually determined at birth based on birth place and his or her parents’ status; and very few circumstances would make a formal change of Hukou status possible. Urban residents are entitled to many social benefits not accessible by rural residents. While government controls over labor migration have been largely relaxed since the 1990s, migrant workers often remain second-class citizens in cities due to their non-local Hukou status. Such institutionalized inferiority imposed on migrant workers manifests itself in forms of discrimination in job markets and deprivation of public services and social benefits, including healthcare benefits (Chan and Zhang 1999).

J. X. Fan (✉)
Department of Family and Consumer Studies, University of
Utah, 225 S 1400 E AEB 228, Salt Lake City, UT 84112-0080,
USA
e-mail: fan@fcs.utah.edu

M. Wen
Department of Sociology, University of Utah, 380 S 1530 E Rm
301, Salt Lake City, UT 84112, USA
e-mail: ming.wen@soc.utah.edu

L. Jin
Department of Sociology, The Chinese University
of Hong Kong, RM 431, Sino Bldg, Shatin, Hong Kong
e-mail: ljin@cuhk.edu.hk

G. Wang
Institute of Population Research and Center for Urban and
Regional Studies, Fudan University, 220 Handan Road,
Shanghai 200433, China
e-mail: wanggx@fudan.edu.cn

The migrant health selection hypothesis emphasizes that migrants are healthier than natives because healthier individuals self-select into migration (Jasso et al. 2004). Recent evidence in China supports this hypothesis. For example, a study of migrants in Hangzhou found that adjusting for age and education, migrants had the best self-rated health and reported the least acute illnesses, chronic diseases, and disabilities compared to both native urban residents and native rural residents (Hesketh et al. 2008). In another study, migrants in a Shanghai sample were found to have better self-reported overall health and measures of mental health, compared to native residents, after an array of confounders were controlled for (Wen et al. 2010).

However, when healthcare utilization and access are of concern, findings from the small existing literature paint a different picture. Several studies have reported reduced access to healthcare (Feng et al. 2005; Shaokang et al. 2002) and inferior health-seeking behaviors associated with frequency of mobility among rural-to-urban migrants in China (Hong et al. 2006; Li et al. 2006). For example, in two studies using different samples (Shenzhen and Beijing), only a third of the migrants who reported illnesses in the previous 2 weeks had actually sought medical care, while the rest chose either self-medication (about another third) or no measures taken (Mou et al. 2009; Peng et al. 2010). In two disease-specific studies on Tuberculosis (TB) using a Chongqing sample, 68% of rural-to-urban migrants experiencing symptoms suggestive of TB delayed care for more than 2 weeks, compared to 54% of local urban residents (Long et al. 2008; Wang et al. 2008).

When asked about reasons for not utilizing care or delaying care when sick, migrants typically cited lack of insurance (Hong et al. 2006), high cost of health services coupled with low income (Hesketh et al. 2008; Hong et al. 2006), lack of time (Hong et al. 2006), and/or lack of perceived need for care (Hong et al. 2006). For example, the high cost of healthcare has been reported as a barrier to healthcare access by 15% of migrants and 8% of urban residents in a Hangzhou sample (Hesketh et al. 2008), and financial constraints have been reported as the biggest barrier to TB services among a sample of Shanghai migrant TB suspects (Wei et al. 2009).

Because of government policies, health insurance coverage is much better for urban residents than for migrants, most of whom are prevented from becoming permanent urban residents by China's Hukou system. For example, Hesketh et al. (2008) reported that only 19% of the migrants in their sample had health insurance, compared to 68% of urban residents. In a Shenzhen migrant sample, 55% of migrants were uninsured. Although disease patterns were similar irrespective of insurance status, the insured were more likely to make doctor visits when sick (Mou et al. 2009). Peng et al. (2010) reported that among a sample of Beijing migrant workers, 94% did not have health insurance in Beijing.

Overall, the body of the extant literature regarding healthcare utilization by migrants in China is very small, consisting of no more than a dozen or so studies of local samples in different parts of China. Issues such as how migration status might interact with other demographic factors such as gender have not been explored. Western literature has consistently shown that women have a higher healthcare service utilization rate than men (Bertakis et al. 2000; Hibbard and Pope 1983; Verbrugge and Wingard 1987). It is unknown whether such a gender difference exists in the Chinese population or how this difference might interact with migration status to affect healthcare access and utilization in China.

In this study, we added to the existing literature by comparing healthcare utilization and access barriers between migrants and local residents in a sample in Shanghai, China, with an emphasis on gender-migration status interaction. By documenting and investigating these differences we sought to provide information to healthcare providers, social workers, and policy makers regarding the critical needs for healthcare services that may help shape future directions of healthcare reform in China. Our specific research questions were: (1) Does migration status affect healthcare utilization? And, (2) Do migrants and locals face different healthcare access barriers? If so, how are they different? Throughout our analysis we explored how healthcare utilization and access barriers might be effected by interactions between gender and migration status.

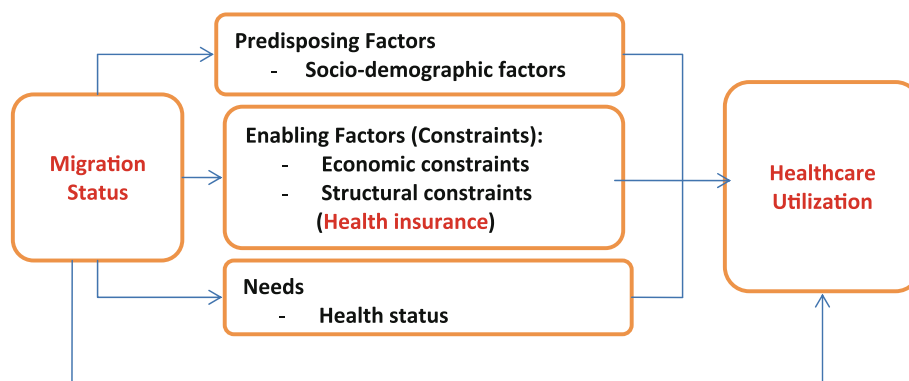
Conceptual Framework

Models of healthcare utilization provide guidance for defining variables, specifying the relationships between them, and evaluating programs and policies concerned with access to and utilization of healthcare services. In this study we applied a simplified version of the behavioral model of health services utilization to help guide our empirical work (Aday and Andersen 2005) (Fig. 1).

The model suggests that people's use of healthcare services is a function of their predisposition to use services (predisposing variables), factors which enable or impede use (enabling variables), and their need for care (need variables). Predisposing variables include demographics such as age and education, and health beliefs. The enabling component refers to resources available to consumers (e.g., income, insurance coverage). The need for care may be based on perceptions of the individual or diagnostic assessments by providers (Aday and Andersen 2005).

Migration status may be associated with health utilization through all three groups of factors, partly because migrants are different from local residents in their

Fig. 1 Conceptual framework



socio-demographic characteristics, and partly because migrants face different constraints imposed by social structure and governmental policy. In addition, because migration is such a life-changing event, it itself is likely a predisposing factor that can directly affect individual's healthcare utilization.

For our first research question, which asked whether migrants have different healthcare utilization patterns compared to locals, we hypothesized that migrants have a lower level of healthcare utilization at the descriptive level. One reason for lower utilization rates among migrants is self-selection, in that migrants are typically younger and healthier than either the locals or non-migrants at home. Migrants also tend to have less education, lower family income, and lower incidence of health insurance coverage—factors typically associated with lower rates of healthcare utilization. Even after these factors are controlled, it is possible that the healthcare utilization rate is still lower for migrants than for locals due to their unfamiliarity with the healthcare delivery system, and possible discrimination in the destination city. Thus, we further hypothesized that even after other predisposing, enabling, and needs factors are controlled, migrants still have a lower healthcare utilization rate than locals.

For the second question of whether migrants and locals differ in their reasons for not utilizing healthcare when sick, we hypothesized that their reasons differ; but no directional hypotheses were formed. Throughout the study we explored the interaction effects of gender and migration on healthcare utilization. While we knew from the western literature that females have higher utilization rates than males, we did not have prior expectations as to how gender may interact with migration status to affect healthcare utilization in Shanghai because no prior studies had looked into these interactions.

Data

Data were from the 2008 Shanghai Health and Migration Study, collected by the authors as a joint effort among the

Chinese University of Hong Kong, Fudan University, and the University of Utah. First, five districts in Shanghai with high concentrations of migrants were selected. Then, in each district, four street-level neighborhoods were randomly chosen. In each neighborhood, 25–30 migrant households and 25–30 households of Shanghai natives were chosen and one person between the age of 16 and 64 was interviewed in each household. The response rate was very high at approximately 95%. We collected information on a range of health behaviors, levels of access to and utilization of healthcare, health outcomes, and personal, family, and neighborhood characteristics among 1,060 respondents in Shanghai, China, including 244 female locals, 285 male locals, 298 female migrants, and 233 male migrants.

Measures

Healthcare Utilization and Access Barriers

We used two variables to measure healthcare utilization. The first measure asked if the respondent had “actually visited a physician in the past 12 months,” while the second measure asked if the respondent had “always visited a physician when feeling sick in the past 12 months.” Both variables were dichotomous. The second measure excluded 84 respondents with no report of sickness incidents. To assess healthcare access barriers, we asked respondents to list reasons why they had not visited a doctor when feeling sick. The reasons included: (1) symptoms not serious, (2) having medication on hand for self-treatment, (3) not having enough money, (4) not having enough time, (5) not convenient, and (6) other reasons such as not knowing where to go for care and not trusting doctors. This measure excluded an additional 50 respondents who had reported “always visited a physician when feeling sick in the past 12 months.” We created six dichotomous variables indicating the presence or absence of these reasons. These reasons were not mutually exclusive because multiple reasons could be listed by a respondent.

Predisposing Factors

Predisposing factors were categorized into two groups: socio-demographic factors and health beliefs. Socio-demographic factors included the gender-migration matrix (female locals, male locals, female migrants, and male migrants), age (continuous), marital status (married, not married), family size (continuous), education (less than high school, high school, college or more), and number of friends (continuous). Health belief was measured by whether the respondent preferred western medicine or traditional Chinese medicine.

Enabling Factors

Enabling factors included economic constraints (time and money) and structural constraints. Weekly work hours were used to measure time constraints because the more hours one worked, the less time one had to go to a doctor when sick. Money constraints were measured by family income from the previous year. Structural constraints were measured by health insurance status.

Needs

Needs were measured by current health status. Three health status measures were examined in this study. Self-rated health was measured by responses to the question: "Overall would you rate your health as excellent, very good, good, fair, or poor?" This variable was dichotomized into excellent/very good/good versus fair/poor. A measure of chronic conditions was constructed based on self-reports of the following conditions: asthma, diabetes, high blood pressure, high cholesterol, heart disease, stroke, arthritis, epilepsy, cancer, hepatitis A and B, and sexually transmitted disease. This variable was denoted "1" if the respondent reported at least one of these chronic conditions. Psychological well-being was assessed through an analysis of answers to six questions: "In the past month, did you ever feel (1) nervous, (2) hopeless, (3) anxious, (4) depressed, (5) worthless, or (6) that everything was an effort?" The scale was valued as the mean score of the six items and had acceptable internal consistency reliability ($\alpha = 0.81$). This variable was reverse-coded with a range of 0 (lowest wellbeing) to 6 (highest wellbeing).

Statistical Methods

In our preliminary analysis, we explored various combinations of interaction terms between migration status and other independent variables. Because the literature did not provide much theoretical guidance in this specific area, our

investigation was based on statistical evidence. In estimating our full interaction models, we consistently found a gender-migration status interaction that was significant in its association with healthcare utilization variables while few other interaction terms were statistically significant. Thus, we created a gender-migration status matrix with four categories: female locals, male locals, female migrants, and male migrants. To test the joint significance of the observed group differences at the descriptive level, we conducted OLS regression on all continuous variables (*F*-tests) and logistic regression (likelihood ratio tests) on all dichotomous variables with only the gender-migration status variables as independent variables.

Logistic regressions were used for the two healthcare utilization models (i.e., actual utilization and always use care when sick). The models identifying reasons for not visiting a doctor when sick were also analyzed using logistic regression. All analyses were conducted using SAS software, version 9.2 (SAS Institute Inc. 2011).

Descriptive Statistics

Table 1 presents descriptive statistics of the sample by gender and migration status, together with *p*-values of *F*-tests for continuous variables and likelihood ratio tests for dichotomous variables. Group differences in actual utilization were statistically significant. The percentage of locals actually utilizing healthcare in the past 12 months was higher than the percentage of migrants, with female locals having the highest utilization rate at 64.75% and male migrants the lowest at 45.49%. Among those who reported sickness incidents, the percentage of respondents who always utilized healthcare when sick was very low, ranging from 3.53% for female migrants to 6.34% for male locals but these group differences were not statistically significant.

"Symptoms not serious" was cited as the most common reason for not seeking healthcare when sick for all four groups, with group differences being statistically non-significant. The second most common reason cited for locals was "self-medication." However, for migrants, it was "no money." About a quarter of each group cited "no time" as a reason for not seeking healthcare when sick. A very small percentage of respondents in each group cited other reasons such as "don't know where to go for care," "don't trust the doctor."

Table 1 also shows that female migrants were the youngest of all four groups at an average age of 33.12, followed by male migrants and female locals, with male locals being the oldest at an average age of 44.44. More male locals were married than any other group; and migrants had larger average family sizes than locals. There

Table 1 Descriptive statistics by gender and migration status

Variable	Female locals <i>n</i> = 244	Male locals <i>n</i> = 285	Female migrants <i>n</i> = 298	Male migrants <i>n</i> = 233	<i>p</i> -value ^a
Actual utilization	64.75%	56.14%	45.97%	45.49%	<0.001***
Always utilize when sick ^b	5.75%	6.34%	3.53%	5.03%	0.459
Reasons for not utilization ^c					
Symptom not serious	69.01%	67.73%	60.07%	63.49%	0.144
Self medication	50.23%	50.20%	41.03%	30.16%	<.001***
No money	25.82%	29.48%	43.22%	40.74%	<.001***
No time	28.64%	31.47%	26.74%	29.63%	0.689
Not convenient	2.82%	2.39%	4.03%	5.29%	0.376
Other reasons	2.87%	3.86%	1.01%	1.29%	0.083*
Predisposing factors					
Age (mean)	39.00	44.44	33.12	36.61	<.001***
Married	76.64%	85.26%	78.86%	76.39%	0.031**
Family size (mean)	2.81	2.81	2.94	3.04	0.004***
Less than high school	23.77%	26.67%	62.08%	59.23%	<.001***
College	38.11%	28.77%	15.44%	17.17%	<.001***
Favors western medicine	86.89%	85.61%	86.24%	87.55%	0.093
Number of friends (mean)	9.27	11.87	10.89	15.14	<.001***
Enabling factors					
Weekly work hours (mean)	39.94	41.13	49.51	53.31	<.001***
Family income (¥10,000, mean)	4.85	4.73	3.47	4.01	<.001***
Insured	95.90%	97.54%	54.36%	51.93%	<.001***
Needs					
Excellent/good health	55.33%	51.23%	61.41%	72.53%	<.001***
Psychological well-being (mean)	3.46	3.49	3.41	3.46	0.043
Having chronic condition	29.92%	44.21%	13.09%	19.31%	<.001***

*** $\alpha \leq 0.01$, ** $\alpha \leq 0.05$, * $\alpha \leq 0.1$

^a *p*-values are based on F-tests for continuous variables and likelihood ratio tests for categorical variables

^b Sample size is 976, excluding 84 respondents with no sickness incidents

^c Sample size is 926, excluding 50 respondents who always visited a physician when feeling sick

was a drastic difference in educational attainment between locals and migrants. The majority of the migrants (62.08% for females and 59.23% for males) had less than a high school education, while only about a quarter of the locals were in this category. Many more locals had college or higher education than migrants. Males, both migrants and locals, reported having more friends than females. Slightly over 85% in all groups reported favoring western medication.

Male migrants worked the most at 53.31 hr per week, followed by female migrants at 49.51 hr per week. However, migrants had lower family income than locals, with female migrants reporting the lowest average at 34,700 Yuan in the previous year. Female locals reported an average of 48,500 Yuan, the highest of all four groups. Note that in 2008 the average urban household income was 49,667 Yuan, and the average rural household income was 26,870 Yuan (National Bureau of Statistics of China 2010).

Although statistics for rural-to-urban migrants as a separate group were not available, the average income for this group was likely between the urban and rural numbers. Our sample statistics were generally in line with these national averages. For reference, in 2008, the exchange rate was 6.9385 Yuan for one U.S. dollar, although the Chinese Yuan has been widely considered as being kept artificially low as it is not determined by market forces (Central Intelligence Agency 2011).

The difference in insurance status between migrants and local residents was drastic. While over 95% of local residents were covered by some form of health insurance, only about half of the migrants had coverage. On the other hand, migrants reported better average general health, and had lower incidents of chronic disease than locals, with male migrants reporting the highest percentage of excellent/good health (72.53%) and female migrants reporting the lowest percentage of having at least one chronic disease (13.09%).

In contrast, 44.21% of male locals reported having at least one chronic condition. The psychological wellbeing scores were similar for all four groups.

Multivariate Results

For each dependent variable, we present logistic regression results for two models. Model 1 only has the gender-migration variables, while model 2 controls for other predisposing, enabling, and needs factors. For each model we present the logistic regression parameter estimates, the average marginal probability, and odds ratio, together with *p*-values for Wald-Chi square tests, although we focus our discussion using average marginal probabilities, which are the means of all marginal probabilities for the sample.

Table 2 presents logistic regression results on actual utilization. Model 1 shows that migrants of both genders and male locals were less likely to have utilized healthcare in the past 12 months, compared to female locals. The coefficients for male locals and female migrants remained significant after confounding factors were controlled, as

shown in Model 2. On average, male locals were about 12.2% less likely to utilize healthcare, while female migrants were 7.7% less likely to utilize healthcare, compared to female locals. Every 10,000 Yuan increase in family income was associated with a 1% higher probability of utilizing care. All needs variables were statistically significant. Having excellent or good health and better psychological wellbeing were associated with lower probabilities of seeking care, while having at least one chronic condition was associated with 20.5% higher probability of utilizing care, other things controlled.

Table 3 shows regression results for the log odds of always visiting a physician when sick. In either the uncontrolled or controlled models, gender and migration status difference was not statistically significant. In addition to the intercept, only two variables were significant in Model 2: number of friends and family income. Both were positively associated with a higher incidence of always seeking care when sick.

For access barriers, logistic regressions were performed on the three leading reasons reported: “symptoms not serious”, “self-medication”, and “no money”. We

Table 2 Logistic regression results: Actual healthcare utilization in the past 12 months ($n = 1,060$)

Variable	Model 1				Model 2			
	Parameter	Average marginal probability	Odds ratio	<i>p</i> -value	Parameter	Average marginal probability	Odds ratio	<i>p</i> -value
Intercept	0.608			<.0001	1.476			0.031
Predisposing factors								
Male locals	-0.361	-0.088	0.697	0.044**	-0.568	-0.122	0.566	0.004***
Female migrants	-0.770	-0.187	0.463	<.0001***	-0.356	-0.077	0.700	0.100*
Male migrants	-0.789	-0.192	0.454	<.0001***	-0.360	-0.077	0.697	0.111
Age					0.001	0.000	1.001	0.880
Married					0.296	0.064	1.345	0.137
Family size					0.037	0.008	1.038	0.655
Less than high school					-0.059	-0.013	0.943	0.725
College					0.279	0.060	1.322	0.163
Favors western medicine					0.154	0.033	1.167	0.434
Number of friends					0.007	0.001	1.007	0.205
Enabling factors								
Weekly work hours					-0.006	-0.001	0.994	0.189
Family income (¥10,000)					0.045	0.010	1.046	0.100*
Insured					0.296	0.064	1.344	0.104
Needs								
Excellent/good health					-0.785	-0.169	0.456	<.0001***
Psychological well-being					-0.449	-0.097	0.638	0.001***
Having chronic condition					0.953	0.205	2.595	<.0001***
Cragg-Uhler R^2			0.032				0.180	

*** $\alpha \leq 0.01$, ** $\alpha \leq 0.05$, * $\alpha \leq 0.1$

excluded the 50 respondents who had always sought care when sick so the sample size for this set of regressions was 926. Results in Tables 4, 5, and 6 show that when no other factors were controlled, compared to female locals, female migrants were less likely to report “symptoms not serious” and “self-medication” while more likely to report “no money” as reasons for not always seeking care. The direction of coefficients was the same for male migrants, except that the coefficient for “symptoms not serious” was statistically non-significant. There was no statistically significant difference between male and female locals.

When other factors were controlled for, the only remaining significant group differences were a much higher incidence of reporting “no money” as a reason for not seeking care when sick by female migrants, and a much lower incidence of reporting “self medication” by male migrants. Specifically, female migrants were about 11.5% more likely to report “no money” as a reason, while male migrants were about 17.9% less likely to report “self medication” as a reason, compared to female locals, other things being equal.

For the control variables, age was only significantly associated with reporting “no money” as a reason, with each year of age associated with 0.4% increase of marginal probably of

reporting this reason. Being married was associated with a higher probability of citing “symptoms not serious” as a reason. Having a larger family size was associated with a lower probability of reporting “symptoms not serious,” but more likely to report “self medication” as a reason. Having a college education and a preference for western medicine were associated with a lower probability of reporting “symptoms not serious” as a reason, other things equal.

For the enabling factors, weekly work hours was positively associated with reporting “symptoms not serious,” while family income was negatively associated with reporting “symptoms not serious” and “no money.” Being insured was associated with a lower probability of reporting “no money” as a reason for not seeking medical care when sick.

For the needs factors, better psychological wellbeing was associated with a 10.8% higher probability of reporting “self medication” but a 7.3% lower probability of reporting “no money” as a reason for not seeking care when sick. Excellent or good health was associated with a 6.9% lower probability of reporting “no money” as a reason. Having at least one chronic condition was not significantly associated with reporting any of these three reasons, other things equal.

Table 3 Logistic regression results: Always seeking healthcare when sick in the past 12 months ($n = 976$)

Variable	Model 1				Model 2			
	Parameter	Average marginal probability	Odds ratio	p -value	Parameter	Average marginal probability	Odds ratio	p -value
Intercept	-2.796			<.0001***	-3.064			0.046**
Predisposing factors								
Male locals	0.104	-0.013	1.110	0.784	0.039	0.002	1.040	0.922
Female migrants	-0.511	-0.089	0.600	0.236	-0.537	-0.025	0.584	0.291
Male migrants	-0.143	-0.056	0.867	0.741	-0.205	-0.010	0.815	0.689
Age					-0.011	-0.001	0.989	0.573
Married					0.370	0.018	1.448	0.430
Family size					-0.016	-0.001	0.984	0.933
Less than high school					0.591	0.028	1.806	0.138
College					0.486	0.023	1.626	0.270
Favors western medicine					0.233	0.011	1.262	0.642
Number of friends					0.020	0.001	1.020	0.015**
Enabling factors								
Weekly work hours					-0.011	0.000	0.989	0.332
Family income (¥10,000)					0.086	0.004	1.090	0.074*
Insured					-0.224	-0.011	0.800	0.610
Needs								
Excellent/good health					-0.071	-0.003	0.931	0.827
Psychological well-being					-0.069	-0.003	0.934	0.800
Having chronic condition					0.386	0.018	1.471	0.283
Cragg-Uhler R^2		0.008				0.057		

*** $\alpha \leq 0.01$, ** $\alpha \leq 0.05$, * $\alpha \leq 0.1$

Table 4 Logistic regression results: Not seeking care because symptoms are not serious ($n = 926$)

Variable	Model 1				Model 2			
	Parameter	Average marginal probability	Odds ratio	p -value	Parameter	Average marginal probability	Odds ratio	p -value
Intercept	0.801			<.0001***	2.363			0.001***
Predisposing factors								
Male locals	-0.059	-0.013	0.942	0.767	-0.037	-0.008	0.963	0.857
Female migrants	-0.392	-0.089	0.676	0.042**	-0.273	-0.060	0.761	0.236
Male migrants	-0.247	-0.056	0.781	0.242	-0.006	-0.001	0.994	0.981
Age					-0.012	-0.003	0.988	0.210
Married					0.535	0.117	1.708	0.011**
Family size					-0.204	-0.045	0.816	0.022**
Less than high school					0.009	0.002	1.009	0.960
College					-0.360	-0.079	0.698	0.098*
Favors western medicine					-0.380	-0.083	0.684	0.092*
Number of friends					-0.002	0.000	0.998	0.824
Enabling factors								
Weekly work hours					-0.017	-0.004	0.983	0.001***
Family income (¥10,000)					0.079	0.017	1.082	0.011**
Insured					0.013	0.003	1.013	0.945
Needs								
Excellent/good health					0.090	0.020	1.094	0.562
Psychological well-being					-0.057	-0.012	0.945	0.665
Having chronic condition					-0.025	-0.006	0.975	0.890
Cragg-Uhler R^2		0.008				0.055		

*** $\alpha \leq 0.01$, ** $\alpha \leq 0.05$, * $\alpha \leq 0.1$

We found significant associations between citing “no money” as a reason for not seeking care when sick and various indicators of vulnerability: old age, migrant status among females, low-income, uninsured, and lower self-rated physical and/or mental health. Specifically, female migrants were 11.5% more likely to report “no money” as a reason for not seeking healthcare when sick, compared to female locals, indicating additional barriers this group might face beyond factors controlled for in this study. Of all our utilization and access barrier measures, this was the only equation where insurance status was significantly associated with the dependent variable. Having insurance was associated with 11.1% lower probability of not seeking care when sick due to lack of money, indicating that insurance coverage, while not having a significant effect on healthcare utilization in general, did have a beneficial effect in reducing cost-related access barriers.

Discussion and Conclusions

Our findings suggest that migrants and locals differ in healthcare utilization rate when sick, and in reasons cited for not seeking care when sick, after controlling for many

other factors. In particular, we find significant gender differences in how migration status affects healthcare utilization and access barriers, in that female migrants as a group are the most vulnerable compared to locals and male migrants, facing healthcare access barriers due to a lack of financial resources.

For the research question of whether migrants have different healthcare utilization patterns compared to locals, our results are mixed. For actual utilization, our results are consistent with our hypothesis in that migrants have a lower rate of actual utilization at the descriptive level, but the difference becomes non-significant for male migrants when other factors are controlled for. Compared to female locals, when other factors are controlled for, the remaining significant group differences are lower probabilities for male locals and female migrants in the actual utilization model. Western literature has consistently shown that women have higher medical care service utilization than men for reasons ranging from reproductive biology or conditions specific to gender to differences in health perceptions and a greater likelihood to seek help (Bertakis et al. 2000; Hibbard and Pope 1983; Mustard et al. 1998; Verbrugge and Wingard 1987). As such, our finding that male locals have a lower medical care utilization rate is

Table 5 Logistic regression results: Not seeking care because of self-medication ($n = 926$)

Variable	Model 1				Model 2			
	Parameter	Average marginal probability	Odds ratio	<i>p</i> -value	Parameter	Average marginal probability	Odds ratio	<i>p</i> -value
Intercept	0.009			0.945	-1.985			0.006***
Predisposing factors								
Male locals	-0.001	0.000	0.999	0.994	-0.044	-0.010	0.957	0.822
Female migrants	-0.372	-0.089	0.689	0.043**	-0.232	-0.054	0.793	0.295
Male migrants	-0.849	-0.203	0.428	<.0001***	-0.775	-0.179	0.461	0.002***
Age					0.004	0.001	1.004	0.661
Married					0.075	0.017	1.077	0.721
Family size					0.191	0.044	1.210	0.029**
Less than high school					-0.453	-0.104	0.635	0.008***
College					-0.170	-0.039	0.844	0.415
Favors western medicine					0.167	0.038	1.181	0.438
Number of friends					-0.006	-0.001	0.994	0.364
Enabling factors								
Weekly work hours					-0.005	-0.001	0.995	0.276
Family income (¥10,000)					0.012	0.003	1.012	0.659
Insured					-0.287	-0.066	0.751	0.138
Needs								
Excellent/good health					0.100	0.023	1.105	0.507
Psychological well-being					0.470	0.108	1.599	0.000***
Having chronic condition					0.269	0.062	1.309	0.126
Cragg-Uhler R^2		0.033				0.084		

*** $\alpha \leq 0.01$, ** $\alpha \leq 0.05$, * $\alpha \leq 0.1$

consistent with the literature, although it is somewhat surprising that the difference between male migrants and female locals is not statistically significant. Further research is needed to look into this issue. The finding that after controlling for other factors, female migrants are less likely to utilize care than female locals while having similar utilization rates as male migrants, is cause for concern. These results suggest that female migrants may face barriers to healthcare not encountered by locals of both genders or male migrants.

Regarding the question of whether migrants and locals differ in their reasons for not utilizing healthcare when sick, the results are consistent with our hypotheses that their reasons do differ, but those differences are diminished when predisposing, enabling, and needs factors are controlled for. At the descriptive level, locals are more likely to cite “self medication” than migrants, while migrants are more likely to cite “no money” than locals. When other factors are controlled for, only two group differences remain significant: that male migrants are less likely to report “self medication” as a reason for not utilizing care when sick, and that female migrants are more likely to cite “no money” as a reason. Past literature has documented a high incidence of unsupervised self treatment among

migrants and expressed concerns about its impact on migrant health outcome (Hong et al. 2006). We find that self treatment is common among both locals and migrants, and that migrants do not face an elevated level of risk of self treatment. In fact, people with higher education levels are more likely to use self-treatment, suggesting that self treatment may be related to confidence in one’s medical knowledge rather than to healthcare access barriers. On the other hand, not accessing care when sick because of a lack of financial resource should be of public health policy concern. On this measure, the most vulnerable group is the female migrants, who have a higher probability of not seeking care when sick because there is “no money” even after family income is controlled, compared to other groups. While there is a large body of western literature documenting the different experiences of males and females in the migration process (Donato et al. 2006; Fry and Center 2006; Hondagneu-Sotelo and Cranford 2006; Mustard et al. 1998; Swain and Garasky 2007), it is not clear how this gender difference in migration process manifests itself in healthcare utilization behavior. In the case of Chinese internal migration, there is evidence that men and women have somewhat different motivations for migration (Yang and Guo 1999), that migrant gender

Table 6 Logistic regression results: Not seeking care because of no money ($n = 926$)

Variable	Model 1				Model 2			
	Parameter	Average marginal probability	Odds ratio	p -value	Parameter	Average marginal probability	Odds ratio	p -value
Intercept	-1.055			<.0001***	0.289			0.693
Predisposing factors								
Male locals	0.183	0.041	1.201	0.381	0.025	0.005	1.025	0.910
Female migrants	0.783	0.174	2.187	<.0001***	0.561	0.115	1.752	0.021**
Male migrants	0.681	0.151	1.975	0.002***	0.392	0.080	1.480	0.134
Age					0.022	0.004	1.022	0.024**
Married					-0.110	-0.023	0.896	0.624
Family size					0.074	0.015	1.077	0.412
Less than high school					-0.108	-0.022	0.898	0.542
College					-0.008	-0.002	0.992	0.973
Favors western medicine					-0.137	-0.028	0.872	0.536
Number of friends					0.000	0.000	1.000	0.980
Enabling factors								
Weekly work hours					0.007	0.002	1.007	0.135
Family income (¥10,000)					-0.144	-0.030	0.866	<.0001***
Insured					-0.544	-0.112	0.580	0.005***
Needs								
Excellent/good health					-0.337	-0.069	0.714	0.033**
Psychological well-being					-0.356	-0.073	0.700	0.008***
Having chronic condition					0.242	0.050	1.274	0.192
Cragg-Uhler R^2		0.033				0.135		

*** $\alpha \leq 0.01$ qs, ** $\alpha \leq 0.05$, * $\alpha \leq 0.1$

segregation and wage discrimination exist in the urban labor market (Fan 2003; Lu and Song 2006), and that female migrants are more likely to engage in casual and commercial sex that put them at higher risk of STDs and HIV, compared to male migrants and local females (Yang et al. 2005; Yang and Xia 2006). We also speculate that there may be a gender imbalance in intra-household resource allocation (Lee 2011), where healthcare for females may not be considered a priority, compared to the needs of other family members. All these could be potential reasons why female migrants are the most vulnerable group in facing healthcare access barriers. Future research is needed in understanding pathways of gender and migration interaction in healthcare behavior and health outcome.

We temper our conclusions with several caveats. First, the relationships found in this paper are carefully described as associations. While a number of controls are included in the analyses, causality is not inferred since the methodology makes no attempt to identify or remedy potential endogeneity. Second, data for this study were collected in Shanghai, one of the major migrant-receiving cities in China but is by no means representative of all migrant-receiving cities. As such, our results may not be

generalizable to other areas of China. Third, the income measure is a 1-year recall measure that is subject to recall bias. It is not clear in which direction this may affect our results.

In summary, we find significant differences in healthcare utilization and access barriers among the four gender-migration status groups. Controlling for predisposing, enabling and needs factors, female migrants are less likely to utilize care, and are more likely to report “no money” as a reason for not seeking care, compared to female locals. We also find that compared to female locals, male locals are less likely to utilize healthcare, and male migrants are less likely to cite “self-medication” as a reason for not utilizing care when sick. Our findings suggest that female migrants as a group face more access barriers than locals and male migrants. We also find that health insurance is important in reducing access barrier due to financial constraints, as one would expect. Obviously, providing health insurance coverage for all is costly, and China may not be at the stage of development where such measures are a priority or even a possibility. However, some policy measures, either nationwide or localized, may be possible to alleviate access barriers faced by female migrants. For example, subsidized insurance for gynecological and

maternal-child healthcare may provide some safety measure for female migrants. Public service offering community-based free or subsidized clinics in migrant-concentrated residential areas can be beneficial as well. While addressing the large issue of healthcare reform in China is beyond of the scope of this paper, our results should aid policy makers in assessing critical needs among different subgroups of the population and set policy priorities accordingly.

Acknowledgments This study was jointly sponsored by the University of Utah, The Chinese University of Hong Kong and Fudan University. The authors thank Xiaoxin Su for her valuable research assistance.

References

- Aday, L. A., & Andersen, R. M. (2005). Models of health care utilization and behavior. *Encyclopedia of Biostatistics*. Wiley.
- Bertakis, K. D., Azari, R., Helms, L. J., Callahan, E. J., & Robbins, J. A. (2000). Gender differences in the utilization of health care services. *Journal of Family Practice*, 49(2), 147–152.
- Blumenthal, D., & Hsiao, W. (2005). Privatization and its discontents—The evolving Chinese health care system. *New England Journal of Medicine*, 353(11), 1165.
- Central Intelligence Agency. (2011). The world fact book, from <https://www.cia.gov/library/publications/the-world-factbook/geos/ch.html>
- Chan, K. W., & Zhang, L. (1999). The hukou system and rural-urban migration in China: Processes and changes. *The China Quarterly*, 160, 818–855.
- Donato, K. M., Gabaccia, D., Holdaway, J., Manalansan, M., & Pessar, P. R. (2006). A glass half full? Gender in migration studies. *International Migration Review*, 40(1), 3–26.
- Fan, C. C. (2003). Rural urban migration and gender division of labor in transitional China. *International Journal of Urban and Regional Research*, 27(1), 24–47.
- Feng, W., Ren, P., Shaokang, Z., & Anan, S. (2005). Reproductive health status, knowledge, and access to health care among female migrants in Shanghai, China. *Journal of Biosocial Science*, 37(05), 603–622.
- Fry, R. A., & Center, P. H. (2006). *Gender and migration*. Pew Hispanic Center.
- Hesketh, T., Jun, Y., Lu, L., & Mei, W. (2008). Health status and access to health care of migrant workers in China. *Public Health Reports*, 123(2), 189.
- Hibbard, J. H., & Pope, C. R. (1983). Gender roles, illness orientation and use of medical services. *Social Science and Medicine*, 17(3), 129–137.
- Hondagneu-Sotelo, P., & Cranford, C. (2006). Gender and migration. *Handbook of the sociology of gender*, pp. 105–126.
- Hong, Y., Li, X., Stanton, B., Lin, D., Fang, X., Rong, M., et al. (2006). Too costly to be ill: Health care access and health seeking behaviors among rural-to-urban migrants in China. *World Health & Population*, 8(2), 22.
- Jasso, G., Massey, D. S., Rosenzweig, M. R., & Smith, J. P. (2004). Immigrant health selectivity and acculturation. In N. B. Anderson, R. A. Buatao, & B. Cohen. (Eds.), *Critical perspectives on racial and ethnic differences in health in late life* (pp. 227–266). Washington, DC: The National Academies Press.
- Lee, M. H. (2011). The one-child policy and gender equality in education in China: Evidence from household data. *Journal of Family and Economic Issues, Online First*, doi:10.1007/s10834-011-9277-9.
- Li, X., Stanton, B., Chen, X., Hong, Y., Fang, X., Lin, D.,... Wang, J. (2006). Health indicators and geographic mobility among young rural-to-urban migrants in China. *World Health & Population*, 8(2), 5.
- Liu, Y., Hsiao, W. C., & Eggleston, K. (1999). Equity in health and health care: The Chinese experience. *Social Science and Medicine*, 49(10), 1349–1356.
- Long, Q., Li, Y., Wang, Y., Yue, Y., Tang, C., Tang, S.,... Tolhurst, R. (2008). Barriers to accessing TB diagnosis for rural-to-urban migrants with chronic cough in Chongqing, China: A mixed methods study. *BMC Health Services Research*, 8(1), 202.
- Lu, Z., & Song, S. (2006). Rural-urban migration and wage determination: The case of Tianjin, China. *China Economic Review*, 17(3), 337–345.
- Mou, J., Cheng, J., Zhang, D., Jiang, H., Lin, L., & Griffiths, S. M. (2009). Health care utilisation amongst Shenzhen migrant workers: Does being insured make a difference? *BMC Health Services Research*, 9(1), 214.
- Mustard, C. A., Kaufert, P., Kozyrskyj, A., & Mayer, T. (1998). Sex differences in the use of health care services. *New England Journal of Medicine*, 338(23), 1678.
- National Bureau of Statistics of China. (2010). *China statistics yearbook 2010*. China Statistics Press.
- Peng, Y., Chang, W., Zhou, H., Hu, H., & Liang, W. (2010). Factors associated with health-seeking behavior among migrant workers in Beijing, China. *BMC Health Services Research*.
- SAS Institute Inc. (2011). SAS Software (Version 9). Cary, NC. Retrieved from www.sas.com
- Shaokang, Z., Zhenwei, S., & Blas, E. (2002). Economic transition and maternal health care for internal migrants in Shanghai, China. *Health Policy and Planning*, 17(Suppl 1), 47.
- Shi, L. (1993). Health care in China: A rural-urban comparison after the socioeconomic reforms. *Bulletin of the World Health Organization*, 71(6), 723.
- Swain, L. L., & Garasky, S. (2007). Migration decisions of dual-earner families: An application of multilevel modeling. *Journal of Family and Economic Issues*, 28(1), 151–170.
- Verbrugge, L. M., & Wingard, D. L. (1987). Sex differentials in health and mortality. *Women and Health*, 12(2), 103–145.
- Wang, Y., Long, Q., Liu, Q., Tolhurst, R., & Tang, S. (2008). Treatment seeking for symptoms suggestive of TB: Comparison between migrants and permanent urban residents in Chongqing, China. *Tropical Medicine & International Health*, 13(7), 927–933.
- Wei, X., Chen, J., Chen, P., Newell, J. N., Li, H., Sun, C.,... Walley, J. D. (2009). Barriers to TB care for rural-to-urban migrant TB patients in Shanghai: A qualitative study. *Tropical Medicine & International Health*, 14(7), 754–760.
- Wen, M., Fan, J., Jin, L., & Wang, G. (2010). Neighborhood effects on health among migrants and natives in Shanghai, China. *Health & Place*, 16(3), 452–460.
- Yang, X., & Guo, F. (1999). Gender differences in determinants of temporary labor migration in China: A multilevel analysis. *International Migration Review*, 33(4), 929–953.
- Yang, H., Li, X., Stanton, B., Chen, X., Liu, H., Fang, X.,... Mao, R. (2005). HIV-related risk factors associated with commercial sex among female migrants in China. *Health Care for Women International*, 26(2), 134–148.
- Yang, X., & Xia, G. (2006). Gender, migration, risky sex, and HIV infection in China. *Studies in Family Planning*, 37(4), 241–250.
- Zhang, W. (2001). *Building for future: The social and financial structure needed to provide effective and affordable care*. Paper presented at the Symposium at the Health Care, East and West, Moving into the 21st Century Conference, Boston, MA.

Author Biographies

Jessie X. Fan (Ph.D., Ohio State University) is Professor in the Department of Family and Consumer Studies at the University of Utah. Her current research focuses on the relationship among individual characteristics, neighborhood environments, public policy, health behavior, and health outcomes in the U.S. and in China.

Ming Wen (Ph.D., University of Chicago) is Associate Professor in the Department of Sociology at the University of Utah. She is currently working on an NIH-funded project examining neighborhood social and built environments and their associations with physical activity and obesity. She is also working on a number of projects examining health and well-being of rural-to-urban migrants and their families in China.

Lei Jin (Ph.D., University of Chicago) is Assistant Professor in the Department of Sociology at the Chinese University of Hong Kong. Her research focuses on health disparities in China, and social networks and health. She is currently working on a large project examining the health effects of relative social positions and social mobilities in China.

Guixin Wang (Ph.D., East China Normal University) is Professor and Director of the Institute of Population Research and the Center for Urban and Regional Studies at Fudan University. His research interest includes migration, urbanization, and the sustainable development of cities.