Socioeconomic Disparity in Healthcare-Seeking Behavior among Chinese Women with Genitourinary Symptoms

Qi Zhang, Ph.D.,¹ Diane Lauderdale, Ph.D.,² Shanshan Mou, B.S.,² William I. Parish, Ph.D.,²
Edward O. Laumann, Ph.D.,² and John Schneider, M.D., M.P.H.²

Abstract

Background: Sexually transmitted infections (STIs) are of growing concern in China. Understanding the relationship between socioeconomic status (SES) and healthcare-seeking (HCS) behavior will help design effective policies to contain the epidemic of STIs across SES.

Methods: We used the Chinese Health and Family Life Survey, a nationally representative survey of 3813 adults from 48 Chinese cities and counties during 1999–2000. We studied the 730 women with at least one genitourinary (GU) symptom. HCS was measured by whether respondents visited a hospital or an unrecognized clinic, self-treatment, or doing nothing. Formal treatment was defined as visiting a hospital. SES was measured by income (tertile group) and education ($\leq$ primary school, junior high school, senior high school, college or above). Bivariate tests and logistic regressions were applied.

Results: There was a significantly positive relationship among income, education, and treatment. Odds ratios (ORs) of medium and high income were 2.01 ($p=0.04$) and 1.39 ($p=0.46$), respectively, after controlling demographics. ORs of middle school, high school, and college or above were 1.81 ($p=0.05$), 2.27 ($p=0.03$), and 1.27 ($p=0.64$), respectively. The relationship between income and formal treatment was also positive, and the relationship between education and formal treatment was negative. Additional adjustment for STI knowledge and experience reduced the HCS disparity across education.

Conclusions: Income and education have different effects on HCS behavior among Chinese women with GU symptoms. Income may affect HCS via affordability, and education is a complicated proxy for sex education, STI knowledge, and experience that will affect the socioeconomic disparity in HCS.

Introduction

SEXUALLY TRANSMITTED INFECTIONS (STI) were virtually eliminated in China in 1964 as a result of the Chinese government's zero-tolerance policy on commercial sex as well as a series of prevention and treatment programs.¹ After three decades of economic reform, however, the prevalence of STIs in China increased dramatically.² Although STIs can cause significant morbidity, treatments for STIs in China often were inadequate.³ Chinese STI patients often relied on private unlicensed physicians rather than formally trained doctors in public hospitals because of stigma associated with public venues.⁴ At the same time, education was found to be inversely related to STI prevalence in both men and women in China.⁵ Little is known about how these socioeconomic status (SES) factors affect the healthcare-seeking (HCS) behaviors among women in China.

In traditional Chinese society, the social and economic status of women is generally inferior when compared with that of men, which complements findings from other settings where women are more likely to live in poverty and to use more healthcare than men.^{6–8} Additionally, women with low income or low education are less likely to use preventive services and more likely to have chronic illness and poorer health status than their higher SES counterparts.⁹ Although income and education are often used as proxies of SES,¹⁰ they may have a different impact on HCS among Chinese women. For example, during the transition era to a market economy, earnings were not positively related to educational investment in China.¹¹ The dissolution of social health insurance in China through the 1990s significantly increased the out-of-pocket costs for patients,¹² and, therefore, low income could be a barrier to access to healthcare for Chinese women with STIs. Unlike in western countries, sex education was very

¹Old Dominion University, Norfolk, Virginia.

²The University of Chicago, Chicago, Illinois.

limited at all levels of school because of the policies adopted by the Chinese government.¹³ Other informal sources, such as adult movies and adult magazines, are usually illegal and severely punished by the government.¹⁴ These underground sources play an important role in disseminating sexual knowledge¹⁴; therefore, it is difficult to predict how formal education attainment might affect HCS behavior among Chinese women with STI symptoms. Without full knowledge of the relationship between SES and HCS behaviors, it would be difficult for the government to implement effective prevention and treatment programs to curb the growing STI epidemic in China.

In this study, we use a national representative survey to examine the relationship between SES and HCS behavior among Chinese women with genitourinary (GU) symptoms. The presence of GU symptoms is an important marker of STIs,¹⁵ and common GU symptoms, such as discharge or dysuria, often lead to a diagnosis of an STI, such as *Chlamydia* infection.¹⁶ Such symptoms often are an important stimulus for HCS behavior among potential STI patients.¹⁷ However, there is limited knowledge of the relationship of this behavior and SES among Chinese women.

Materials and Methods

Data

The Chinese Health and Family Life Survey (CHFLS) included a nationally representative sample of adults aged 20–64 years in China.⁵ It was designed as a complex survey with four sampling steps. First, 14 strata were created in China based on size of the urban population and location. Second, two to six administrative units were selected from each stratum, which constructed 48 primary sampling units (PSU). Third, in each PSU, one or two subunits, such as villages, were picked probabilistically to construct a total of 60 sample units. Finally, approximately 83 adults aged 20–64 were randomly selected in each sampling community based on the official community registers of households. Interviewers were mostly mid-career to late-career social workers and had 1 week's training. To protect privacy, interviews took place away from the respondents' home, such as a private hotel room. Interviewers first explained the study and read the respondent an informed consent form that was approved by the institutional review boards at the University of Chicago, Chicago, Illinois, Renmin University, Beijing, China, and Peking Medical College, Beijing, China. Oral and computer-entered consent was obtained prior to the computerized interview. The computerized survey was based on the 1992 U.S. National Health and Life Survey and was pretested in China in three field trials. More details about the survey can be found in Parish et al.⁵ Among the initial 5000 sampled individuals, 3813 participants completed the standardized computer-based interview; 730 of these women reported GU symptoms.

Measures

GU symptoms among women were measured as experiences of burning when urinating, genital lesion, colored or foul smelling genital discharge, presence of warts, and pelvic pain. All symptoms were limited to episodes within 12 months of interview. Another variable was created for "having symptom now."

HCS behavior measurements were generated to reflect differences in healthcare facilities in China. Most private clinics that treat STIs are not licensed in China, are of unknown effectiveness,⁴ and may lead to untreated symptoms.⁸ HCS behavior was based on the answer to the following question: The last time when any of the genitourinary symptoms happened, what did you do? Having treatment was defined as "went to a hospital, visited a private clinic, and took or applied medicine." No treatment was defined as "took no medical measures."

SES is a complex construct to rank individuals in a society on the basis of characteristics, including income, education, occupation, residence, and family background.¹⁰ Therefore, it is difficult to use one dimensional measure to describe SES correctly. In this study, we used income and education as two separate measures of SES. For income, we used tertile of personal monthly income to measure low, medium, and high SES. To account for the complex income distributions in China, we also tested the grouping of <200 Yuan per month, 200–500 Yuan per month, and >500 Yuan per month. Other cutoff points were used to determine how sensitive the results were. Two hundred Yuan is approximately \$30, which represents the \$1/day poverty line used by United Nations.¹⁹ For education, we created four educational groups: primary school or less, middle school, high school, college or above. China has adopted a 9-year compulsory education system. Students often cease their education and start working after middle school, as high schools are often considered as college preparatory schools. The college entrance examination is extremely competitive, however, and only very limited numbers of high school graduates can be admitted to colleges or universities.²⁰ Therefore, we chose to classify the educational levels into four groups to fully account for those factors.

Indicators of sexual behavior were measured as the number of partners in the past 12 months. The variable was categorized as none, one partner, and two or more partners.

Demographics included age, marital status, rural/urban, migrating status, and region of residence. Coastal south and coastal east represent the most developed and affluent regions in China, whereas inland, north/northeast, and central west regions are considered less developed regions.²¹ Migrant status was defined as being a resident for <5 years.

STI knowledge and experience were measured with two variables. A dummy variable was created if there was self-reported or physician-diagnosed STI status in the participant's lifetime. Another dummy variable was created if the participant had no knowledge about the terms STI and AIDS in Chinese, which terms were basic indicators of STI knowledge in China.

Statistical analysis

All analyses were adjusted for complex survey design. Svy commands in STATA 9.0 (STATA Corp., College Station, TX) were used to generate correct standard errors by accounting for the clustering effect of the survey. We first examined the differences in the prevalence of any treatment by income and education levels. Chi-square tests were conducted to test the differences between groups. Among patients with treatment, we examined the differences in the prevalence of formal treatment, that is, visiting a hospital, by SES. We used two definitions of income and education in the bivariate analyses

to examine whether the grouping by different cutoff points would affect the relationship. To control for potential confounding factors, we conducted logistic regression analyses to examine the relationship between HCS behavior and SES. Two outcome variables were used. Among women with GU symptoms, seeking treatment was the outcome. Among those who received any treatment, whether they had formal treatment was defined as a second outcome variable. Low income and primary school or less education were used as the reference group. Odds ratios (ORs), 95% CIs, and *p* values were estimated. To examine the potential impact of STI experience and knowledge on the relationship between treatment and SES, we first used the models without controlling STI experience and knowledge. Finally, we conducted bivariate analyses between education and STI experience and knowledge.

Results

The mean age of Chinese women with GU symptoms was 35.7 years (Table 1). Only 14.0% of women received education above the high school level, and 81.6% of women had a monthly income <499 Yuan (~70 USD). The median number of sex partners in their lifetime was 1, and 88.7% had one partner in the past year. Only 0.3% of women with GU symptoms had sex for pay or gifts. At the time of the interview, 36.6% reported symptoms. About one quarter of the

TABLE 1. CHARACTERISTICS OF WOMEN EXPERIENCING GENITOURINARY SYMPTOMS IN PAST 12 MONTHS (*N*=730)^a

Characteristic	Mean or %	SE
Age (year)	35.7	1.2
Highest level of education (%)		
Primary school	46.5	5.0
Middle school	39.5	4.9
Senior school	11.0	1.1
College or above	3.0	0.5
Personal monthly income (Yuan)		
<200	45.0	11.8
200–499	36.6	9.0
>500	18.4	3.4
Occupation as manual worker (%)	12.1	1.4
Urban (%)	27.0	2.7
Marital status		
Never married	7.4	1.3
Married	89.5	1.3
Divorced/widowed	3.1	1.2
Migrant (<5 years of residence)	1.5	0.6
Region		
South coastal	4.5	2.0
East coastal	4.3	1.7
Inland south	31.9	16.4
North/northeast	24.0	6.1
Central west	35.3	16.7
Lifetime number of partners (median)	1.0	1.0
Number of partners in past 12 months		
0	6.4	1.2
1	88.7	1.1
≥2	4.9	1.0
Having sex for pay/gifts	0.3	0.1
Having symptoms now	36.6	4.0
No STD knowledge	24.5	2.6
Having STD diagnosis ever	14.4	2.9

^aSampling weight adjusted.

women had no knowledge about STIs or AIDS, and 14.4% of women reported having a diagnosed STI in their lifetime.

The overall relationship between HCS behavior and SES is described in Table 2. We used two definitions of education and income to examine the sensitivity of the results. The relationship between income and HCS behavior was direct, with higher income corresponding to a higher percentage of women who had formal treatment. The relationship between income and treatment, however, demonstrated the same pattern but did not achieve statistical significance. Results were similar between two definitions of income.

The relationship between education and HCS behavior was more complicated. If education was measured by two categories, the percentage of the college or above education group receiving treatment was higher than that of the primary school or less education group (60.3% vs. 47.8%, *p*=0.02). If measured by four groups, however, we found that the college or above group had similar low treatment rates to those among women in the primary school or less education group. The high school group generated the highest treatment rates, and there was significant disparity of treatment across educational groups (*p*=0.01). However, when education was measured in two groups, the college or above education group had lower rates of formal treatment than the primary school or less education group, but the disparity was not significant (*p*=0.33).

Table 3 describes logistic regression models without controlling STI experience and knowledge. Higher income was positively associated with HCS behavior. ORs of medium income and high income were 2.01 (*p*=0.04) and 1.39 (*p*=0.46), respectively (low income was the reference group). Although women with higher income were more likely to visit a hospital, the relationship was not significant (*p*=0.35). Interestingly, education had a different impact on the treatment-seeking behavior vs. formal treatment-seeking behavior. Middle school and high school groups were more likely to seek treatment compared with primary school or less education group (OR 1.81 and 2.27, *p*<0.05). However, the OR of the college or above group was 1.27 (*p*=0.64), which was not significantly different from 1. For formal treatment, ORs for all three education groups (OR 0.28, *p*=0.06; OR 0.37, *p*=0.10; OR 0.60, *p*=0.45) were far lower than 1, which means that those groups were less likely to seek formal treatment than the primary school or less education group. The negative relationship between education and hospital visiting was marginally significant among primary school or less and middle school education groups (*p*≤0.10).

Table 4 depicts the logistic regression analyses, adjusted for STI experience and knowledge. Because coefficients for all other covariates (data not shown) were similar to those in Table 3, only estimates of income, education, STI experience, and knowledge were provided to reduce redundancy. The results of income effect were similar to the results in Table 3. For treatment outcome, the ORs of all education groups decreased and became insignificant, which means the relationship of the socioeconomic disparity in treatment could be partially explained by the STI experience and knowledge. However, the OR of college or above was <1 (OR 0.93, *p*=0.90), which means women with college or above education were less likely to seek treatment, although it was not statistically significant. Medium income was still a significant protector of treatment seeking (OR 3.38, *p*<0.01).

TABLE 2. BIVARIATE ANALYSES OF RELATIONSHIP BETWEEN TREATMENT-SEEKING BEHAVIOR AND SES

	<i>Treated (%)</i>	<i>SE</i>	<i>p value</i>	<i>Treated formally (%)</i>	<i>SE</i>	<i>p value</i>
Education						
Definition 1						
≤Primary	47.8	4.1	0.02	63.4	15.2	0.33
Middle School or above	60.3	2.3		46.3	7.7	
Definition 2						
≤Primary	47.8	4.1	0.01	63.4	15.2	0.28
Middle school	59.0	2.9		41.5	10.2	
High school	67.6	3.7		55.6	5.4	
College or above	49.2	6.3		75.1	8.7	
Income						
Definition 1						
<200	49.3	4.1	0.23	40.4	9.6	0.02
200–499	57.5	4.3		60.0	7.3	
>500	60.9	4.4		66.1	4.7	
Definition 2						
Low	44.4	5.4	0.10	36.3	7.8	0.08
Medium	61.0	3.0		56.9	12.7	
High	58.1	6.3		62.5	5.1	

For formal treatment, the OR of the middle school group was marginally significant (OR 0.34, $p = 0.09$). The results indicated that the primary school or less education group was more likely to seek formal treatment. The ORs of high school and college or above education groups were still far less than 1 (OR 0.42 and 0.68), although they did not achieve statistical significance. The ORs of medium and high income groups were >1 (OR 1.76 and 1.93); however, again both p values were >0.10 .

We found significant regional disparities in HCS behavior. Women in less developed regions (inlands, north/northeast, and central west) were significantly less likely to seek any treatment ($p \leq 0.01$) than their counterparts in developed regions (coastal south) regardless of income or education status. The ORs of women in the north/northeast and central west seeking formal treatment were significantly <1 ($p < 0.01$) in both income and education models. The findings highlight the positive relationship between HCS and regional economic development.

Discussion

Although traditionally, income and education are proxies of SES,¹⁰ we found that these two SES indicators have different relationships with HCS behavior among Chinese women with GU symptoms. Education may not only be a proxy of SES but also represent a proxy of STD-related knowledge or experience. For example, the income disparity in any treatment remained statistically significant after controlling for STI experience and knowledge, whereas the educational disparity in any treatment disappeared after controlling for these factors. Although there was a positive relationship between income and formal treatment and a negative relationship between education and formal treatment, the socioeconomic disparity in formal treatment was not statistically significant. Moreover, the relationship between income and any treatment is not monotonically increasing or decreasing. Medium-income groups consistently had higher probability to have any treatment than did low-income groups, whereas high-income

groups were not statistically different from low-income groups in seeking any treatment. This finding contradicts the traditional knowledge that patients with higher SES are more likely to access healthcare systems.²² Despite one U.S. study that found a significantly negative relationship between HCS and income among patients with urinary symptoms,²³ there are few studies in the literature to explain the U-shaped relationship between income and HSC behavior.

We suspect that the possible stigma associated with STIs may be the major barrier for women with high SES to actively seek treatment. Based on Chinese beliefs and culture, seeking treatment with STI symptoms may indicate socially undesirable sexual behavior, which can bring shame and embarrassment.²⁴ In one study, the perception of stigmatization delayed treatment seeking among STI patients until symptoms worsened.²⁵ This study also found that STI patients with a college education were more likely to perceive stigmatization than those with lower education. Therefore, the perception of stigmatization in women of higher SES may be more a barrier to treatment than it is for those with lower SES.

The point estimates in Tables 3 and 4 suggest that women with primary school or less education may be more likely to visit hospitals if they seek any treatment compared with women with higher than primary school education, although the educational disparity in formal treatment was not statistically significant. Knowledge of STIs might be an important factor that explains formal treatment seeking among Chinese women with GU symptoms. The educational disparity in any treatment lost significance after controlling for STI experience and knowledge, which suggests that specific sex education may be more important to the HCS decision than general education. Without a reliable measure of sex education, we can only use general education as its proxy. There is some suggestion that primary school graduates receive little if any knowledge about STIs in the school systems because of the limited sex education.¹³ Conversely, women with college or above education may receive more correct information about STIs through formal or informal channels. Women completing high school may obtain some education in the formal school

TABLE 3. LOGISTIC REGRESSIONS OF RELATIONSHIP BETWEEN SES AND GENITOURINARY SYMPTOMS WITHOUT CONTROL OF STD EXPERIENCE AND KNOWLEDGE

	Treated						Treated formally					
	Model 1 (SES = income) (n = 730)			Model 2 (SES = education) (n = 730)			Model 1 (SES = income) (n = 437)			Model 2 (SES = education) (n = 437)		
	OR	95% CI	p value	OR	95% CI	p value	OR	95% CI	p value	OR	95% CI	p value
Age	1.01	(0.98, 1.03)	0.53	1.02	(0.99, 1.05)	0.14	1.02	(0.98, 1.06)	0.32	0.99	(0.96, 1.02)	0.65
Income												
Low	Reference			-	-	-	Reference			-	-	-
Medium	2.01	(1.02, 3.94)	0.04	-	-	-	1.77	(0.75, 4.17)	0.19	-	-	-
High	1.39	(0.56, 3.46)	0.46	-	-	-	1.61	(0.58, 4.42)	0.35	-	-	-
Education												
≤Primary	-	-	-	Reference			-	-	-	Reference		
Middle school	-	-	-	1.81	(1.01, 3.27)	0.05	-	-	-	0.28	(0.08, 1.05)	0.06
High school	-	-	-	2.27	(1.12, 4.63)	0.03	-	-	-	0.37	(0.11, 1.22)	0.10
College or above	-	-	-	1.27	(0.46, 3.50)	0.64	-	-	-	0.6	(0.16, 2.32)	0.45
Marital status												
Never married	Reference			Reference			Reference			Reference		
Married	0.33	(0.07, 1.53)	0.15	0.3	(0.06, 1.53)	0.14	0.94	(0.10, 8.73)	0.96	0.9	(0.1, 8.41)	0.92
Divorced/widowed	0.08	(0.01, 0.72)	0.03	0.06	(0.01, 0.55)	0.01	6.19	(0.31, 123.4)	0.22	5.19	(0.26, 103.4)	0.27
Migrant	2.58	(0.66, 10.06)	0.17	3.03	(0.74, 12.39)	0.12	0.37	(0.15, 0.9)	0.03	0.31	(0.10, 0.93)	0.04
Rural	0.95	(0.56, 1.62)	0.85	1.27	(0.71, 2.29)	0.41	0.34	(0.21, 0.57)	<0.01	0.24	(0.13, 0.46)	<0.01
Number of partners in past 12 months												
None	Reference			Reference			Reference			Reference		
1	4.87	(0.66, 36.14)	0.12	5.24	(0.63, 43.81)	0.12	0.39	(0.02, 7.98)	0.53	0.37	(0.02, 8.03)	0.51
2	2.29	(0.21, 24.46)	0.48	3.39	(0.34, 33.90)	0.29	0.29	(0.02, 3.94)	0.34	0.23	(0.02, 2.80)	0.24
Symptom now	1.09	(0.59, 2.01)	0.77	1.15	(0.56, 2.37)	0.70	2.93	(1.49, 5.77)	<0.01	3.24	(1.70, 6.18)	<0.01
Region												
Coastal south	Reference			Reference			Reference			Reference		
Coastal east	0.65	(0.23, 1.83)	0.40	0.64	(0.22, 1.87)	0.40	1.72	(0.76, 3.93)	0.19	1.74	(0.72, 4.18)	0.21
Inlands	0.26	(0.11, 0.60)	<0.01	0.31	(0.14, 0.69)	<0.01	1.74	(0.57, 5.34)	0.32	1.6	(0.53, 4.83)	0.40
North/north east	0.37	(0.17, 0.77)	0.01	0.37	(0.19, 0.72)	<0.01	0.28	(0.11, 0.68)	<0.01	0.27	(0.12, 0.64)	<0.01
Central west	0.31	(0.13, 0.76)	0.01	0.3	(0.14, 0.64)	<0.01	0.28	(0.08, 0.93)	0.04	0.26	(0.08, 0.89)	0.03

TABLE 4. LOGISTIC REGRESSIONS OF RELATIONSHIP BETWEEN SES AND GENITOURINARY SYMPTOMS WITH CONTROL OF STD EXPERIENCE AND KNOWLEDGE AND REGIONS^a

	Treated				Treated formally			
	Model 1 (SES = income) (n = 730)		Model 2 (SES = education) (n = 730)		Model 1 (SES = income) (n = 437)		Model 2 (SES = education) (n = 437)	
	OR	95% CI	p value	OR	95% CI	p value	OR	95% CI
Income								
Low	Reference							
Medium	3.38	(1.37, 4.14)	<0.01	-			-	
High	1.39	(0.68, 2.83)	0.35	-			-	
Education								
≤Primary	-	-	-	Reference			Reference	
Middle school	-	-	-	1.55	(0.68, 3.56)	0.29	0.34	(0.09, 1.19)
High school	-	-	-	1.90	(0.77, 4.72)	0.16	0.42	(0.13, 1.35)
College or above	-	-	-	0.93	(0.30, 2.88)	0.90	0.68	(0.19, 2.45)
STD ever	3.66	(1.61, 8.35)	<0.01	3.64	(1.68, 7.90)	<0.01	0.86	(0.44, 1.70)
STD knowledge	0.40	(0.12, 1.37)	0.14	0.51	(0.12, 2.18)	0.35	2.40	(0.34, 17.05)

^aThe model controlled for age, marital status, migrating status, rural/urban, partners in last 12 months, regions, and symptom status.

setting but may receive incorrect information from other informal sources.¹³ Moreover, a previous study suggested that patients with a higher education or more HIV/STI knowledge were increasingly likely to perceive stigmatization, conferring a positive relationship among education, STI knowledge, and perception of stigmatization.²⁵ A recent study also suggests that Indian women with higher education reduce treatment seeking for reproductive illness because the stigma associated with STIs.²⁶ Therefore, for women with primary school or less education, lack of knowledge about the significance of their symptoms may result in less perception of stigmatization compared with those of higher education groups.

Economic factors have significant influences on patients' treatment-seeking decision making. In China, STI patients can purchase medicine directly from drug stores without prescription.²⁷ Therefore, women with higher income are more likely to seek any treatment, including self-treatment, than women with low income. However, if they decide to seek any treatment, perhaps after considering the economic burden, the income disparity in visiting a hospital is no longer statistically significant, although middle-income or high-income groups were still more likely to seek formal treatment. It is also important to point out the regional disparity in HCS behavior. Economic development has been faster in the southeast coast than in the northwest inland.²⁸ Individuals in the southeast coast region on average have higher SES than those in the inland. Therefore, controlling for regions in the model partially controlled the SES effect on HCS behavior.

There are several limitations to the study. The sample size was relatively small, although it was generated from a nationally representative survey. The survey does not contain an accurate measure of sex education and knowledge or the perception of stigma with STIs. Thus, we may have overestimated the relationship between education and HCS behavior. Targeted sex education contrasted with general education may be a fundamental decision factor of HCS behavior. More research is needed to measure the level of sex education among Chinese women and men. The absence of clinical data to confirm the relationship of symptoms and biological causes (e.g., bacterial vaginosis [BV], candidiasis) and the choice of focusing on only four major symptoms may have led to an underestimation of GU symptoms in this study and causes of symptoms other than STIs. It is important for researchers to collect measures of these factors in future work.

Our study generated important implications to promote adequate treatment among Chinese women with GU symptoms. Contrary to common wisdom, patients with higher SES are equally likely if not more likely to have inadequate treatment. Therefore, policymakers should reduce barriers of treatment for all women, not only those with low SES. Moreover, specific sex education may be a more important factor than general education in HCS among Chinese women with GU symptoms. Not only could sex education in Chinese school systems be reformed, but the promotion of sex education across social classes outside of the school system may represent another strategy to provide adequate STI knowledge for women.

Conclusions

Using nationally representative data, we studied the impact of SES on HCS behavior among Chinese women with

GU symptoms. Our results showed that higher income was associated with a greater likelihood of seeking any treatment. However, income and education each had a different impact on whether to seek formal treatment. Women with higher income were more likely to visit the hospital, but this HCS behavior did not achieve statistical significance. In contrast, women with more education were significantly less likely to visit hospitals for treatment. After controlling for STI experience and knowledge, the negative relationship between education and HCS still existed but was no longer statistically significant.

In summary, we found that higher SES was a stimulus for women with GU symptoms to seek any treatment, although knowledge of STIs and perception of stigmatization may deter women with higher education from seeking formal treatment. To contain the STI epidemic in China, it is necessary to adopt effective interventions targeting women at all levels of SES to potentiate receipt of appropriate healthcare.

Acknowledgments

The study was supported in part by the following research grants: National Institute of Child Health and Human Development R03 HD056073 (Q.Z.), R01 HD34157 and P30 HD18288 (D.L., W.I.P., E.O.L.), and National Center for Research Resources KL2RR025000. We thank three reviewers for their comments and suggestions.

Disclosure Statement

The authors have no conflicts of interest to report.

References

- Chen X, Gong X, Liang G, Zhang G. Epidemiologic trends of sexually transmitted diseases in China. *Sex Transm Dis* 2000;27:138–142.
- Abrams HK. The resurgence of sexually transmitted disease in China. *J Public Health Policy* 2001;22:429–440.
- Choi K-H, Zheng X, Zhou H, Chen W, Mandel J. Treatment delay and reliance on private physicians among patients with sexually transmitted diseases in China. *Int J STD AIDS* 1999;10:309–315.
- Lieber E, Li L, Wu Z, Rotheram-Borus MJ. HIV/STD stigmatization fears as health-seeking barriers in China. *AIDS Behav* 2006;10:463–471.
- Parish WL, Laumann EO, Cohen MS, et al. Population-based study of chlamydial infection in China. *JAMA* 2003;289:1265–1273.
- Verbrugge L. Gender and health: An update on hypotheses and evidence. *J Health Soc Behav* 1985;25:156–182.
- Popay J, Bartley M, Owen C. Gender inequalities in health: Social position, affective disorders and minor physical morbidity. *Soc Sci Med* 1993;36:21–32.
- Zick C, Smith K. Marital transitions, poverty and gender differences in mortality. *J Marriage Fam* 1991;53:327–336.
- Mead H, Witkowski K, Gault B, Hartmann H. The influence of income, education, and work status on women's well-being. *Womens Health Issues* 2001;11:160–172.
- Williams DR, Collins C. U.S. socioeconomic and racial differences in health: Patterns and explanations. *Ann Rev Sociol* 1995;21:349–386.
- Wu X, Xie Y. Does the market pay off? Earnings returns to education in urban China. *Am Sociol Rev* 2003;68:425–442.
- Liu X, Hsiao WCL. The cost escalation of social health insurance plans in China: Its implication for public policy. *Soc Sci Med* 1995;41:1095–1101.
- Ruan F-F, Lau MP. The international encyclopedia of sexuality: China. New York: Continuum, 2001.
- Pan SM. Reality and absurdity—Underground sex industry in China. Beijing: Qun Yan Publishing House, 1999.
- Hawkes S, Morison L, Foster S, et al. Reproductive-tract infections in women in low-income, low-prevalence situations: Assessment of syndromic management in Matlab, Bangladesh. *Lancet* 1999;354:1776–1781.
- Ciemins EL, Flood J, Kent CK, et al. Reexamining the prevalence of *Chlamydia trachomatis* infection among gay men with urethritis: Implications for STD policy and HIV prevention activities. *Sex Transm Dis* 2000;27:249–251.
- Celum CL, Gail B, Krone M, et al. Patients attending STD clinics in an evolving health care environment: Demographics, insurance coverage, preferences for STD services, and STD morbidity. *Sex Transm Dis* 1997;24:599–605.
- Pirkle C, Soundardjee R, Stella A. Female sex workers in China: Vectors of disease? *Sex Transm Dis* 2007;34:696–703.
- United Nations. 2008. Millennium development goals indicators. Available at mdgs.un.org/unsd/mdg/Metadata.aspx?IndicatorId=1 Accessed October 27, 2008.
- Tsui M, Rich L. The only child and educational opportunity for girls in urban China. *Gender Soc* 2002;16:74–92.
- Demurger S, Sachs J, Woo WT, Bao S, Chang G, Mellinger A. Geography, economic policy, and regional development in China. *Asian Econ Pap* 2002;1:146–197.
- Feinstein JS. The relationship between socioeconomic status and health: A review of the literature. *Milbank Q* 1993;71:279–322.
- Jacobsen SJ, Guess HA, Panser L, et al. A population-based study of healthcare-seeking behavior for treatment of urinary symptoms. The Olmsted County study of urinary symptoms and health status among men. *Arch Fam Med* 1993;2:729–735.
- Guan JH, Leiber E, Li L, Wu ZY, Rotheram MJ, NIMH Collaborative HIV Prevention Trial Group. A qualitative study on HIV/STD stigma and health seeking behavior. International AIDS Society Annual Conference, 2004.
- Liu H, Detels R, Li X, Ma E, Yin Y. Stigma, delayed treatment, and spousal notification among male patients with sexually transmitted disease in China. *Sex Transm Dis* 2002;29:335–343.
- Sudha S, Morrison S, Zhu L. Violence against women, symptom reporting, and treatment for reproductive tract infections in Kerala State, Southern India. *Health Care Women Int* 2007;28:268–284.
- Ye S, Su X, Wang Q, Yin Y, Dai X, Sun H. Surveillance of antibiotic resistance of *Neisseria gonorrhoeae* isolates in China, 1993–1998. *Sex Trans Dis* 2002;29:242–245.
- Chen A. Urbanization and disparities in China: Challenges of growth and development. *Chin Econ Rev* 2002;13:407–411.

Address correspondence to:

Qi Zhang, Ph.D.

3138 Health Sciences Building

School of Community and Environmental Health

Old Dominion University

Norfolk, VA 23529

E-mail: qzhang@odu.edu