Use of Health Services by Women with Gynecological Symptoms in Rural China

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Abstract

Background: To examine the relation between demographic factors and symptom type in the use of gynecological health services in rural China.

Methods: Married women aged 19 to 45 years from three rural communities in Anhui province, central China, were invited to participate in a structured interview in the summer of 2006. They provided information on gynecological symptoms, healthcare-seeking behaviour and socio-demographic characteristics. Risk factors were analyzed using logistic regression.

Results: 860/1221(70.4%) reported at least one gynecological symptom during the previous year, with 485 (39.7%) reporting three or more. Of the women with symptoms, 36.7% sought treatment during the previous year. Younger women and those with multiple symptoms were more likely than others to seek treatment. Women with abnormal vaginal bleeding or discharge were more likely to delay seeking treatment. Years of education were strongly related to seeking treatment. More highly educated women and women with a higher household income were more likely than others to seek treatment at the highest level (county or city hospital) of the tertiary healthcare system rather than at a village clinic or township hospital. Women who did not seek treatment were more likely to report that they saw no need than to say that they could not afford care.

Conclusion: There may be a misperception of the need for, and utility of, treatment for gynecological symptoms, particularly in more disadvantaged women. Interventions should both address women's negative perceptions and reinforce the capacity of the local health facilities to ensure effective care.

Introduction

In developing countries, improvement of reproductive health depends strongly on the strengthening of health systems (Maine 2007). In China, by the mid-1970s a highly structured, three-tier healthcare system was established, and it has been strengthened in recent years. Family planning education and counselling are available to rural women at village clinics. Family planning, antenatal and obstetrical services, and treatment of gynecological symptoms are available in township health centres, county hospitals, and county maternal and child-care centres.

Recent reports show that use of antenatal and obstetrical services has increased in rural China, due in part to economic improvements and the increased capacity of the reproductive health services (Ministry of Health 2008a). Analysis of the China National Health Services Survey showed that rates of antenatal examination have increased steadily, from 60% in 1993, to 87% in 1998, to 96% in 2003. Hospital delivery rates have likewise increased from 22% to 41% to 62% during these years (Centre for Health Statistics and Information 2003).

However, use of health services for gynecological disorders has not increased during the same period. (China Gender and Development Organization 2008; Gao and Cai 2003; Guo et al. 2002; Population Family Planning Committee Development Department 2006). National and regional studies indicate that the incidence of gynecological disorders is high. (China Gender and Development Organization 2008). Some 38% to 85% of rural women have been found to complain of at least one symptom that may indicate reproductive-tract infection; however, use of health services has remained low (Gao and Cai 2003; Guo et al. 2002 Population Family Planning Committee Development Department 2006).

Reproductive health covers a broad range of health concerns (World Health Organization [WHO] 2010). In China, it is suspected that gynecological disorders are increasingly affecting rural women's health (China Primary Health Care Foundation 2006). Along with health promotion to enable women to undergo a safe pregnancy and childbirth (Ministry of Health 2008b; The People Net 2005) the next priority issues may be to combat sexually transmitted infections, reproductive tract infections, cervical cancer and other gynecological morbidity. There is a need for accessible and timely healthcare for these disorders and a better understanding of barriers to the use of such services.

The extent to which cultural and psychosocial factors can influence women in traditional and rural settings to seek reproductive healthcare is gaining recognition (Orach et al. 2007). For antenatal and obstetrical care, physical distance from service provision as well as socio-economic factors have been shown to be important (Ensor and Cooper 2004; Filmer and Pritchett 2001; Mumtaz and Salway 2007; Mwifadhi et al. 2007). Rural women may experience the same barriers to seeking gynecological healthcare under the Chinese three-tier rural health system. However, the distinctive difference observed in China between the levels of utilization for these two services may indicate that factors other than socio-economics and distance play an important role in the way in which women seek healthcare for gynecological symptoms.

Previous studies of these symptoms and the use of health services suggest an unmet need in some

segments of society for early diagnosis and treatment of potentially serious gynecological symptoms such as abnormal bleeding or breast abnormalities (Liu et al. 2007; Schettino et al. 2006). There is also a need for services to deal in a rational way with common gynecological complaints such as abnormal vaginal discharge (Patel et al. 2006). Few studies have systematically explored the association between different types of gynecological symptoms and health service utilization. In particular it remains unclear whether different types of symptoms are more likely to be recognized or ignored by women. As rural women in China commonly have no employer or health insurance system to organize and pay for periodic physical examinations, it is for the woman herself to recognize the need for treatment (Jia et al. 2005). In 2008, a national rural health insurance system was established (Ministry of Health 2008b), followed by a cervical cancer screening program initiated in 2009. (Ministry of Health China 2009). Nevertheless, given the rural healthcare system's limited capacity for diagnosis and treatment, it is important to explore which gynecological symptoms trigger healthcare use and to look for ways to promote practical treatment options. This is a question of considerable public health importance, if intervention priorities for this population are to be clarified and met.

We hypothesize that different symptoms may lead to different healthcare-seeking behaviours and to choosing different healthcare providers. If this is true, it would have significant implications for the way reproductive health programs are delivered. If women were more aware of the differential importance of particular symptoms, and primary care workers were better trained to respond, the cost-effectiveness of the very limited resources available for rural women in developing regions would improve.

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We set out to investigate the role of demographic factors and gynecological symptom characteristics in determining healthcare use through a population-based study in rural China.

Methods

Study Design and Target Population

The study used a cross-sectional survey design. Three counties (Feixi, Zongyang and Lujiang) were randomly selected from central Anhui province after stratification on economic levels such that one county with high, one with medium and one with low incomes relative to the rest of the province were selected. In each sampled county, one town was randomly selected and then a random sample taken of five villages associated with the town. All married female residents aged 19 to 45 years in the selected villages were included in the study sample. Data were collected in August and September 2006.

Survey Methods

Female research assistants who had been trained in interviewing conducted face-to-face structured interviews. They explained the objectives of the study and provided assurance of confidentiality. After giving informed consent, participants provided detailed information on demographic and socioeconomic characteristics, on gynecological symptoms and on use of services within the previous 12 months. Participants with limited literacy skills completed the survey verbally in a private room; the remainder completed written questionnaires.

Ethical Approval

The study received ethical approval from the Anhui Medical University Research Ethics Board. During field work, information sheets about the study in three counties were given out, explaining why it was being carried out, by whom, and what it would involve. Written consent of all participants was sought, with oral consent accepted from those unable to write.

The Questionnaire

Demographic factors and gynecological symptoms were identified from a review of the literature. Questionnaires were piloted with 55 rural women to assess the feasibility and clarity of items. The questionnaire consisted of three sections: gynecological symptoms, socio-demographic information, and healthcare utilization.

Gynecological Symptoms

Eight gynecological disorders were identified from the literature (Anderson et al. 2004; Harlow and Campbell 2004; Ryan et al. 1998), and participants were asked if they had experienced any of these during the past year. The classes of symptom were (1) abnormal vaginal discharge (increasing leucorrhea, leucorrhea with odour, leucorrhea with abnormal colour or shape, (2) abnormal uterine bleeding (long duration of menstrual flow, excessive/heavy or profuse bleeding, frequent periods of short cycles, spotting or inter-menstrual bleeding, amenorrhea/no menses for three or more months, oligomenorrhea/menstrual cycles of 35 to 90 days, infrequent menses), (3) abdominal pain (lower backache, abdominal pain not with menstruation, cramps with menstruation), (4) a palpable lump in the abdomen (one that can be touched or felt), (5) vulval itch, (6) abnormal urination (frequent urination, a pressing need to urinate or pain during urination), (7) pain during sexual intercourse, and (8) breast abnormality (palpable axillary lymph node/callosity, palpable lump in the breast, abnormal nipple discharge, red or wrinkled skin).

Socio-demographic Characteristics

Participants provided demographic information including age, education and annual family income. Annual family income was grouped into four levels: <5000 RMB (approximately 600 US dollars), 5000 to 10,000 RMB, 10,000 to 15,000 RMB and ≥15,000 RMB. Education was also grouped into four levels: illiterate and semi-illiterate, 1 to 5 years' education, 6 to 9 years' education and 10 years' education or more.

Healthcare Utilization

Questions focused on treatment for the most recent symptom, asking:

1. Did you seek treatment for the most recent gynecological symptoms [of the eight listed above] during the previous year? Response options were yes and no. Where a participant reported more than one symptom, the symptom precipitating the healthcare-seeking behaviour could not be isolated;
2. How many days after you first experienced the symptom did you go to see a doctor? Response options were 0 to 1 day, 2 to 3 days, 4 to 6 days, 1 week to 1 month and >1 month; timely treatment was defined as a delay of ≤1 month; and
3. In which of the following health institutions have you sought treatment for the most recent symptom? The treatment options listed were village clinic, township health centre, city/county hospital, and provincial and other hospital. In the event that the woman reported using more than one institution, the highest level was coded: 1 if the highest level was a village clinic, 2 if the highest level was a township hospital, 3 if the highest level was in the city/county, and 4 if the highest level was a provincial/other hospital.

Statistical Methods

The distribution of symptoms, treatment, timely treatment and health institution by demographic factors was summarized in a descriptive analysis. Logistic regression was used to explore the relationships between demographic factors, number of symptoms and healthcare use, first in a univariate analysis and then in multivariate analyses, taking account first of the number of symptoms and second of the nature of the symptoms. All *p*-values were assessed using two-sided tests with $p < .05$ taken as the criterion for statistical significance. Analyses were conducted using SPSS (Version 11.5).

Results

Among 1398 eligible women identified, 1221 agreed to participate, a response rate of 87.3%.

Characteristics of Study Participants

The three communities were equally represented. Table 1 shows that 392, 429 and 400 participants were recruited from low, middle and high economic regions, respectively. Nearly half the women (598) were aged 30 to 39. For the large majority (1141; 93.4%) education level was less than 10 years. Approximately three quarters of women (928) were from families whose income was under 15,000 RMB ($2000 US) per year. Both years of education and family income were related to the economic level of the region. The proportion of women with 10 or more years' education was greater (12.3%) in the highest economic region than in the lowest (3.8%). Similarly, 35.5% of women in the highest economic region had a family income of ≥15,000 RMB, compared with 12.9% in the lowest.

Gynecological Symptoms

Seventy percent (860/1221) of women reported experiencing gynecological symptoms during the previous year. There was no significant difference between those with and without symptoms for any of the socio-demographic characteristics, although women under 30 years appeared somewhat more likely to report one or more symptoms than older women, and women with family incomes <5000 RMB were somewhat less likely to report symptoms than other women (Table 1, first column).

Among the 1221 participants, 15.5% (189/1221) reported experiencing only one gynecological symptom during the previous year, 15.2% (185/1221) had two symptoms, and 39.7% (485/1221) had three or more.

The most commonly reported symptoms were abnormal vaginal discharge (697/1221; 57.1%), vulval itch (380/1221; 31.1%), abnormal urination (266/1221, 21.8%), abdominal pain (255/1221; 20.9%) and pain during intercourse (199/1221; 16.3%) (Table 2, first column). The rate of each symptom showed no significant difference by region, age, education and income (data not shown), except for reported breast abnormalities, where the rate was higher (6.7%) in the 30 to 39 year group than in younger (2.4%) or older (3.0%) women (chi-square = 10.87; $p < .01$).

Healthcare Utilization

Of the 860 women with symptoms in the last year, 316 (36.7%) sought healthcare for the most recent symptom. The proportion doing so, and the proportions seeking treatment in a timely fashion, are shown in Columns 2 and 3 of Table 2 and in Figure 1. Here, significant differences were found with demographic factors. Women from poorer regions, of younger age and higher education level were more likely to seek treatment (Table 3, middle columns). Of those 316 seeking treatment, 47 (14.9%) sought healthcare within one day of the symptom's appearance, 133 (42.1%) within two to seven days, 64 (20.3%) between one and four weeks, and 72 (23%) sought care only after one month or more. No statistical difference was found in timely treatment (defined as less than one month) by demographic factors (Table 3, final columns), although women aged 30 years or more appeared somewhat more likely to delay consulting a doctor, as did women with more than one symptom.

Table 1. Summary data on prevalence of any symptom complaints, any treatment seeking and treatment ≤1 month during the previous year

	Any symptom[a]					Any treatment[b]					Treatment in ≤1 month[c]				
	N	n	%	χ^2	*p*(trend)[d]	N	n	%	χ^2	*p*(trend)[d]	*N*	n	%	χ^2	*p*(trend)[d]
Region economic level															
Low	392	276	70.4	0.13	0.718	276	125	45.3	5.40	0.021	125	102	81.6	3.63	0.057
Middle	429	307	71.6			307	92	30.0			92	20	21.7		
High	400	277	69.3			277	99	35.7			99	29	29.2		
Age															
≤29	252	188	74.6	1.10	0.295	188	86	45.7	15.14	0.000	86	12	13.9	3.55	0.060
30–39	598	412	68.9			412	157	38.1			157	41	26.1		
≥40	371	260	70.1			260	73	28.1			73	19	26.0		
Education															
None	168	111	66.1	0.01	0.927	111	35	31.5	6.12	0.013	35	9	25.7	0.32	0.571
1–5	488	355	72.7			355	123	34.6			123	29	23.6		
6–9	485	341	70.3			341	130	38.1			130	28	21.5		
10+	79	53	67.1			53	28	52.8			28	6	21.4		
Income[e]															
<5000	119	77	64.7	0.65	0.421	77	31	40.3	4.61	0.032	31	8	25.8	0.36	0.545
5,000–10,000	385	279	72.5			279	91	32.6			91	19	20.8		
10,000–15,000	424	294	69.3			294	95	32.3			95	27	28.4		
≥15,000	286	207	72.4			207	98	47.3			98	18	18.4		
Number of symptoms															
1						189	56	29.9	8.74	0.003	56	47	83.9	3.23	0.072
2						185	61	33.0			61	50	82.0		
3 and more						485	199	41.0			199	147	73.9		

[a]The total sample in this column is 1221; % means the percentage of responsive women with any symptom.
[b]The total sample in this column is 860; % means the percentage of symptom women seeking treatment.
[c]The total sample in this column is 316; % means the percentage of treatment women seeking treatment ≤1 month.
[d]*p* (trend) for Linear-by-Linear Association based on χ^2 test.
[e]Seven participants did not report their income.

Table 2. Gynecological symptoms reported and treated

Symptom	Number of women with complaint in the last 12 months (%)[a]	Proportion of women who sought treatment for a single symptom (%)[b]	Proportion of women who sought treatment in for a single symptom in ≤1 month (%)[b]
Abnormal vaginal discharge	697 (57.1%)	24/92 (26.1)	17/24 (70.8)
Abnormal uterine bleeding	66 (5.4%)	3/3 (100)	2/3 (66.7)
Abdomen lump	33 (2.7%)	0/0	–
Abdomen pain	255 (20.9%)	4/21 (19.0)	4/4 (100)
Vulval itch	380 (31.1%)	16/34 (47.1)	15/16 (93.8)
Abnormal urination	266 (21.8%)	7/18 (38.9)	7/7 (100)
Pain during sexual intercourse	199 (16.3%)	1/17 (5.9)	1/1 (100)
Breast abnormality	57 (4.7%)	1/4 (25.0)	1/1 (100)

[a]The total sample in this column is 1221.
[b]Women (*n* = 189) complaining of one symptom only (see text) of whom 56 sought treatment, 47 in ≤1 month.

Figure 1. Treatment and timely treatment by regional economic level, education, age and income

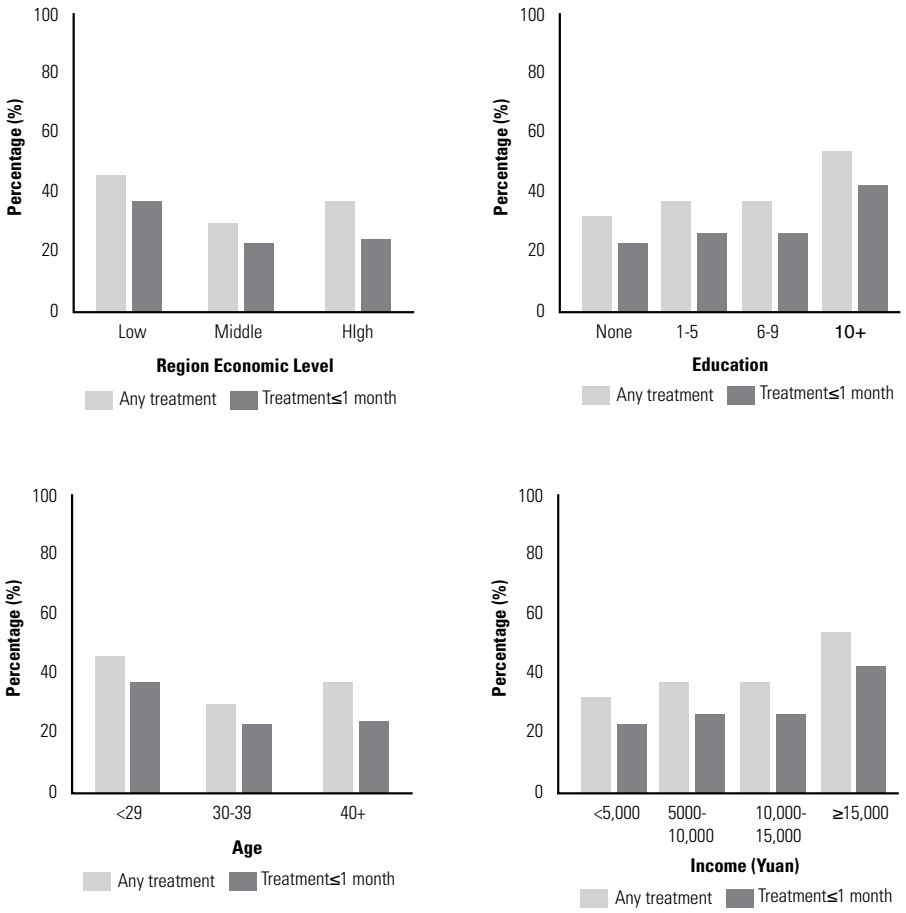

Table 3. Demographic, symptom number and treatment information on the study sample (univariate analysis)

Characteristics	Any symptom		Any treatment		Treatment in ≤1 month	
	OR	95% CI	OR	95% CI	OR	95% CI
Region economic level						
Low	1	1	1	1	1	1
Middle	1.0	0.8–1.4	0.51	0.3–0.7	0.81	0.4–1.6
High	0.9	0.7–1.3	0.67	0.4–0.9	0.54	0.3–1.0
Age						
<29	1	1	1	1	1	1
30–39	0.7	0.5–1.0	0.72	0.5–1.0	0.46	0.2–0.9
40+	0.8	0.5–1.1	0.46	0.3–0.7	0.46	0.2–1.0
Education						
None	1	1	1	1	1	1
1–5	1.4	0.9–2.0	1.15	0.7–1.8	1.12	0.4–2.7
6–9	1.2	0.8–1.8	1.34	0.8–2.1	1.26	0.5–3.0
10+	1.0	0.6–1.8	2.43	1.2–4.8	1.27	0.4–4.1
Income						
<5000	1	1	1	1	1	1
5000–10000	1.4	0.9–2.2	0.72	0.4–1.2	1.32	0.5–3.4
10000–15000	1.2	0.8–1.9	0.71	0.4–1.2	0.87	0.3–2.2
≥15000	1.4	0.9–2.2	1.33	0.8–2.3	1.55	0.6–4.0
Number of symptoms		—				
1			1	1	1	1
2			1.17	0.7–1.8	0.87	0.3–2.3
3 and more			1.65	1.1–2.4	0.54	0.3–1.2

Among those reporting only one symptom, treatment was sought most frequently by the small number of women with abnormal uterine bleeding and least by those with pain during intercourse; timely treatment seeking was lowest for those with abnormal bleeding or discharge (Table 2, Columns 2 and 3).

Of the 316 women seeking treatment, 308 reported the health institution they used. Nearly 10% of women (40) sought treatment from more than one health institution. Referring to the highest institutional level reported, 14.6% of women used only the village clinic, 46.4% women the township health centre, 26.9% the city/county level and 12.0% sought treatment in provincial/other hospitals (Table 4).

Table 4. Demographic factors and selection of health institution for women seeking treatment (*n* = 308)[a]

Variable	*n*	Village clinics			Township health center			City/county hospital			Provincial/other hospital		
		n	%	*p*(trend)[b]	*n*	%	*p*(trend)[b]	*n*	%	*p*(trend)[b]	*n*	%	*p*(trend)[b]
Region economic level													
Low	124	21	16.9	0.236	68	54.8	0.000	18	14.5	0.000	17	13.7	0.022
Middle	88	11	12.5		45	51.1		15	17.0		17	19.3	
High	96	13	13.5		30	31.3		50	52.1		3	3.1	
Age													
<29	83	11	13.3	0.762	37	44.6	0.443	27	32.5	0.599	8	9.6	0.534
30–39	153	23	15.0		75	49.0		35	22.9		20	13.1	
40+	72	11	15.3		31	43.1		21	29.2		9	12.5	
Education													
None	34	5	14.7	0.106	19	55.9	0.085	2	5.9	0.000	8	23.5	0.218
1–5	119	24	20.2		53	44.5		30	25.2		12	10.1	
6–9	127	13	10.2		65	51.2		35	27.6		14	11.0	
10+	28	3	10.7		6	21.4		16	57.1		3	10.7	
Income													
<5000	31	5	16.1	0.026	16	51.6	0.907	4	12.9	0.028	6	19.4	0.529
5000–10000	89	17	19.1		43	48.3		20	22.5		9	10.1	
10000–15000	91	17	18.7		39	42.9		24	26.4		11	12.1	
≥15000	96	6	6.3		45	46.9		34	35.4		11	11.5	
Number of symptoms													
1	53	13	24.5	0.013	23	43.4	0.198	10	18.9	0.022	7	13.2	0.464
2	60	11	18.3		30	50.0		16	26.7		3	5.0	
3 and more	195	21	10.8		90	46.2		57	29.2		27	13.8	
Total	308	45	14.6		143	46.4		83	26.9		37	12.0	

[a]Eight women did not report the health institution selected.
[b]*p*(trend) for Linear-by-Linear Association based on χ^2 test.

Among women with symptoms who had not consulted a doctor (544/860), the reasons given for not seeking healthcare were: believing this to be unnecessary (385/544; 70.8%), high medical expense (56/544; 10.3%), having no time (51/544; 9.4%), feeling too shy to see a doctor (50/544; 9.2%), difficulty traveling to the clinic (9/544; 3.5%) and other reasons (52/544; 9.6%).

We examined the choice of health institution by region, age, education, income and number of symptoms (Table 4). In the most wealthy economic region, more than half the women chose treat-

Table 5. Factors associated with reproductive health service use (multivariate analysis)

Explanatory variable	Dependent variable: any treatment for symptom (n = 860)		Dependent variable: treatment in ≤1 month (n = 316)	
	Model 1 (exp(B), 95% CI)	Model 2 (exp(B), 95% CI)	Model 3 (exp(B), 95% CI)	Model 4 (exp(B), 95% CI)
Region economic				
Low	1	1	1	1
Middle	0.52 (0.4–0.7)*	0.54 (0.4–0.8)*	0.76 (0.4–1.5)	0.74 (0.3–1.5)
High	0.59 (0.4–0.9)*	0.58 (0.4–0.8)*	0.47 (0.2–0.9)**	0.50 (0.2–1.0)
Age				
<29	1	1	1	1
30–39	0.96 (0.6–1.4)	0.97 (0.6–1.5)	0.44 (0.2–1.0)**	0.40 (0.2–0.9)**
40+	0.58 (0.3–0.9)**	0.56 (0.4–0.9)*	0.45 (0.2–1.1)	0.38 (0.2–0.9)**
Education				
None	1	1	1	1
1–5	1.44 (0.8–2.3)	1.40 (0.8–2.3)	1.37 (0.5–3.6)	1.60 (0.6–4.5)
6–9	1.63 (0.9–2.7)	1.59 (0.9–2.7)	1.12 (0.4–3.0)	1.18 (0.40–3.2)
10+	2.79 (1.2–6.1)**	2.71 (1.2–6.0)	0.94 (0.2–3.8)	0.88 (0.20–3.7)
Income (RMB)				
<5000	1	1	1	1
5000–10000	0.70 (0.4–1.2)	0.69 (0.4–1.2)	1.35 (0.5–3.6)	1.30 (0.5–3.7)
10000–15000	0.67 (0.4–1.2)	0.68 (0.4–1.2)	0.90 (0.3–2.4)	0.93 (0.3–2.6)
≥15000	1.1 (0.6–1.9)	1.1 (0.6–2.0)	1.65 (0.6–4.8)	1.59 (0.5–4.7)
Number of symptoms				
1	1	–	1	–
2	1.20 (0.8–1.9)	–	0.83 (0.3–2.2)	–
3 and more	1.67 (1.1–2.4)*	–	0.53 (0.2–1.2)	–
Symptom 1 (yes/no)	–	1.22 (0.8–1.8)	–	0.40 (0.2–0.9)**
Symptom 2 (yes/no)	–	1.59 (0.9–2.7)	–	0.40 (0.2–1.0)**
Symptom 3 (yes/no)	–	1.37 (0.6–3.0)	–	1.46 (0.4–5.9)
Symptom 4 (yes/no)	–	1.12 (0.8–1.6)	–	0.71 (0.40–1.3)
Symptom 5 (yes/no)	–	1.76 (1.3–2.4)*	–	1.00 (0.6–1.8)
Symptom 6 (yes/no)	–	1.07 (0.8–1.5)	–	0.92 (0.5–1.7)
Symptom 7 (yes/no)	–	0.74 (0.5–1.1)	–	0.64 (0.3–1.3)
Symptom 8 (yes/no)	–	0.99 (0.5–1.8)	–	0.96 (0.3–2.9)

Note. exp(B) and 95% CI of independent variables in each model were listed, and – means that the variable was not included in the model.
In Models 2 and 4, exp(B) for each symptom means the difference in (timely) treatment seeking between women with and without that symptom.
Symptoms: 1 = abnormal vaginal discharge, 2 = abnormal uterine bleeding, 3 = abdomen lump, 4 = abdomen pain, 5 = vulval itch, 6 = abnormal urination, 7 = pain during sexual intercourse, 8 = breast abnormality.
*$p < .01$; **$p < .05$.

ment at the city/county hospital compared with only about one in six of women in the poorer region (p = .000). Women were more likely to make this choice as educational level increased (p = .000). Those with high incomes and those with many symptoms were more likely to use the city/county hospitals and less likely to use village clinics.

Table 5 present the results of models constructed to take account of demographic and socio-economic factors on seeking treatment and on the timeliness of presentation to the doctor. Models 1 and 2 were developed to examine factors associated with treatment seeking, having taken account of numbers of symptoms (Model 1) and type of symptoms (Model 2). In Model 1, having adjusted for all other factors, we found that women of age 40 years or older were less likely to seek treatment, as were those from the wealthier region. Women with higher educational levels and those with three or more symptoms were more likely to seek treatment. There was little difference in treatment seeking by type of symptom (Model 2), but vulval itch, and perhaps abnormal uterine bleeding, were positively associated with the likelihood of treatment. Models 3 and 4 were constructed to examine factors associated with timely treatment seeking. Women in the most affluent region were less likely to seek timely treatment, as were women aged 30 to 39 years compared with those aged <30 years (Model 3). Those with more symptoms were somewhat less likely to seek treatment within one month than women with fewer symptoms. Women with symptoms of abnormal vaginal discharge and abnormal uterine bleeding were less likely to seek timely treatment than those with other symptoms (Model 4).

Discussion

Safe and appropriate management of gynecological symptoms requires prompt action from women as well as access to appropriate health clinics. Understanding the factors associated with seeking healthcare that either facilitate or act as a barrier can help in designing population-sensitive programs to encourage rational use of services.

This study identified demographic and symptom characteristics associated with use of healthcare for gynecological symptoms among women in rural China. These findings suggest ways to improve timely, safe and rational use of services.

Understanding the factors associated with seeking healthcare that either facilitate or act as a barrier can help in designing population-sensitive programs to encourage rational use of services.

Effects of Demographical and Community Factors on Treatment Seeking

Age, education, income and region were shown to be associated with aspects of treatment seeking and choice of institution. Young women sought more treatment than older ones, but age did not affect choice of health institution. Women in the region with the highest economic level sought less treatment, and less timely treatment, compared with those in the middle and lowest economic regions. (see Figure 1). Women from families with the highest income sought treatment more from county/city hospitals and less from village clinics than those with the lowest family income. The women with 10+ years of education were more likely than the less educated both to seek treatment and to attend the county/city hospital (Table 4).

Besides the effects of demographic factors, there are may be other cultural–social–community factors that contribute to treatment-seeking behaviour. Both social network (Miltiades and Wu 2008) and place of residence (Ham and Lee 2007) have been shown to be associated with health service utilization. Women's traditional inferior status in rural China may partly explain the gap between the use of antenatal and obstetrical services and the use of other gynecological services. In our study area, it was commonly believed that antenatal and obstetric care was a family matter,

linked to the family's future development, while gynecological disorders were a problem only for the woman herself. Further, traditional cultures of silence surrounding gynecological symptoms may inhibit women from obtaining information about it or from seeking services (Harlow and Campbell 2004).

Women's traditional inferior status in rural China may partly explain the gap between the use of antenatal and obstetrical services and the use of other gynecological services.

Effect of Symptoms on Treatment Seeking

It has been argued that health service seeking and delayed treatment are affected by the severity of the symptom (Aroian and Vander Wal 2007), symptom recognition (Rodriguez et al. 2001) and individual interpretation of the symptom, including the awareness of the potential risk (Armfield et al. 2007; Patel et al. 2007). Our results support these earlier findings.

Nearly 45% (385/860) of women who reported one or more symptom did not seek treatment because they felt this was unnecessary. Only 28% women with symptoms (244/860) sought treatment within one month. These results suggest that the symptoms were not recognized as a threat to health. The resulting delay in treatment may result in more serious or chronic gynecological conditions. It strongly indicates an urgent need to promote the awareness of the potential risk and importance of early detection and diagnosis in rural areas. Patient education programs should make efforts to improve understanding and recognition of symptoms.

In this study the most common gynecological symptoms among women of reproductive age were abnormal vaginal discharge (57.1%) and vulval itch (31.1%). This is concordant with reports from other countries, although the symptom complaint rate differs among regions (Patel et al. 2005; Welsh et al. 2004). Vaginal symptoms appear to be one of the most common reasons for gynecological consultation worldwide (Anderson et al. 2004). Our research suggests that women with vulval itch were more likely to seek treatment than women who complained of other symptoms. But women with symptoms of abnormal vaginal discharge or abnormal uterine bleeding were both less likely to seek healthcare within a month of symptoms developing. Both these symptoms may indicate, at least in some women, serious conditions requiring prompt interventions. They are easily recognized by the woman, raising questions about why treatment is delayed.

Previous evidence has suggested that psychosocial factors correlate with treatment seeking, including initial emotional distress, fear of the consequences (Matasha et al. 1998), fear of disclosure of symptoms, negative attitudes toward physicians (Mbizvo et al. 1997), pessimistic beliefs about the consequences of treatment, lower perceived risk, not wanting to think about symptoms (Aroian and Vander Wal 2007) and optimism (Rodriguez et al. 2001). Whether the same psychological states may play a role in delaying recognition and treatment of both abnormal discharge and bleeding needs to be explored in future research.

Further, our findings suggest that among women who seek treatment, those with three or more symptoms are somewhat less likely to seek timely treatment than women with one or two symptoms. The vicious cycle of symptom fear found in other diseases (Armfield et al. 2007) may also exist in women with gynecological symptoms, whereby women with greater fear are more likely to delay treatment, leading to more extensive symptom problems. So understanding the extent to which these elements, such as symptom perception, psychological factors and timely treatment seeking, are interacting in rural China may be of considerable relevance to the planning of interventions to improve gynecological health.

Building Grass-roots Capability

Analysis within the tertiary (village–township–county) health service system framework in rural

China gives some detailed clues on how to approach grass-roots capability building to promote reproductive health.

In our study area, a woman who elects to use the county/city hospital rather than lower-level facilities seeks care at a greater distance and a higher price. It was found that women in the area with higher economic status seek care less frequently and with less timely use of services. Preference for the most costly, higher-level heath institutions may be one reason for them to put off seeking care. If increasing numbers of women develop the same preference for care at a higher-level institution, this may reduce the viability of the grass-roots health institutions (village clinics, township health centres), potentially weakening access to these facilities by less privileged women. The importance of meeting women's changing demands and winning their confidence in rural health institutions must be recognized during the rural health system rebuilding process.

To promote appropriate use of services, physicians and others in the grass-roots institutions need training to understand the women's perceptions of their gynecological symptoms, to assess mental health and other co-morbidities and to provide routine testing for bacterial diagnosis, so paving the way for etiological treatment algorithms and referral of more serious conditions.

The aim of this study was to quantify the extent to which demographic factors and symptoms are associated with use of gynecological healthcare. A limitation of the study is that use of healthcare services was self-reported; historical chart reviews were not feasible due to the poor quality of records in rural China. However, self-reported service utilization has been shown to be valid and reliable (Montano and Phillips 1995). The way in which symptom information was collected precluded clear attribution of treatment seeking to a particular symptom where more than one symptom was experienced during the 12-month period, and this limits the certainty with which conclusions can be drawn about the impact of each symptom. It is also recognized that a comprehensive reproductive health service would include counselling, advice and preventive healthcare; information on these aspects was not collected as they are very rare in rural China.

The strengths of the study include representative sampling and the successful recruitment of a large sample of women from this under-studied rural Chinese population. Our findings contribute to knowledge of women's use of healthcare services for gynecological complaints in rural China, highlighting the contributions of demographic factors and symptom characteristics and, importantly for future planning, describing for the first time factors associated with choice of healthcare provider.

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References

Anderson, M.R., K. Klink and A, Cohrssen 2004. "An Evaluation of Vaginal Complaints." *Journal of the American Medical Association* 291(11):1368–79.

Armfield, J.M., J.F. Stewart and A.J. Spencer. 2007. "The Vicious Cycle of Dental Fear: Exploring the Interplay Between Oral Health, Service Utilization and Dental Fear." *BMC Oral Health* 14(1): 7.

Aroian, K.J. and J.S. Vander Wal. 2007. "Health Service Use in Russian Immigrant and Nonimmigrant Older Persons." *Family & Community Health* 30(3): 213–23.

Centre for Health Statistics and Information. 2003. "An Analysis Report of National Health Services Survey in 2003." Ministry of Health, China.

China Gender and Development Organization. 2007. "Report on Rural Women's Gynecological Disorder Census." Retrieved January 20, 2008. <http://www.china-gad.org/ReadNews.asp?NewsID=553>.

China Primary Health Care Foundation. 2006. "Introduction on China Health Poverty Alleviation Project." Retrieved August 26, 2007. <http://www.cphcf.org.cn/zsxm7.htm>.

Ensor, T. and S. Cooper. 2004. "Overcoming Barriers to Health Service Access: Influencing the Demand Side." *Health Policy and Planning* 19(2): 69–79.

Filmer, D. and L. Pritchett. 2001. "Estimating Wealth Effects without Expenditure Data – or Tears: an Application to Educational Enrollments in States of India." *Demography* 38(1): 115–32.

Gao, B. and L. Cai. 2003. "Study on Reproductive Trait Infection of Childbearing Women in Sichuan Province." *Maternal and Child Health Care of China* 18(5): 94–7.

Guo, S., L. Wang and R. Yan. 2002. "Health Service Needs of Women with Reproductive Tract Infections in Selected Areas of China." *Chinese Medical Journal* 115(8): 1253–6.

Ham, O.K. and C.Y. Lee. 2007. "Predictors of Health Services Utilization by Hypertensive Patients in South Korea." *Public Health Nursing* 24(6): 518–28.

Harlow, S.D. and O.M. Campbell. 2004. "Epidemiology of Menstrual Disorders in Developing Countries: a Systematic Review." *BJOG – an International Journal of Obstetrics and Gynaecology* 111(1): 6–16.

Jia, H.Y. and Wang.H.F. 2005. "Survey Evaluation Report on Women's Health Index." *Journal of Chinese Maternal and Children's Health* 20(1):12–4.

Liu, Z., Q.V. Doan, P. Blumenthal and D.W. Dubois. 2007. "A Systematic Review Evaluating Health-Related Quality of Life, Work Impairment, and Health-Care Costs and Utilization in Abnormal Bleeding." *Value in Health: the Journal of the International Society for Pharmacoeconomics and Outcome Research* 10(3): 183–94.

Maine, D. 2007. "Detours and Shortcuts on the Road to Maternal Mortality Reduction." *The Lancet* 370(9595): 1380–2.

Matasha, E., T. Ntembelea, P. Mayaud, W. Saidi, J. Todd, B. Mujaya and L. Tendo-Wambua. 1998. "Sexual and Reproductive Health Among Primary and Secondary School Pupils in Mwanza, Tanzania: Need for Intervention." *AIDS Care* 10(5): 571–82.

Mbizvo, M.T., J.V. Gupta, S. Rusakaniko, S.N. Kinoti, W. Mpanju-Shumbushu, A.J. Sebina-Zziwa, R. Mwateba and J. Padayachy. 1997. "Effects of a Randomized Health Education Intervention on Aspects of Reproductive Health Knowledge and Reported Behaviour Among Adolescents in Zimbabwe." *Social Science & Medicine* 44(5): 573–7.

Miltiades, H.B. and B. Wu. 2008. "Factors Affecting Physician Visits in Chinese and Chinese Immigrant Samples." *Social Science & Medicine* 66(3): 704–14.

Ministry of Health. 2008a. "Main Results of the Fourth National Health." Ministry of Health, China. Retrieved March 31, 2010. >http://politics.people.com.cn/GB/101380/8882245.html

Ministry of Health. 2008b. "Development of New Cooperative Medical System in 2008." Ministry of Health, China. Retrieved February 3, 2010. <http://www.moh.gov.cn/publicfiles/business/htmlfiles/mohncwsgls/s3581/200804/31097.htm>.

Ministry of Health. 2009. Note for Rural Cervical Cancer Screening 2009–2011. Ministry of Health, China. Retrieved February 3, 2010. <http://www.moh.gov.cn/publicfiles/business/htmlfiles/mohfybjysqwss/s3581/200909/42977.htm>.

Montano, D.E. and W.R. Phillips. 1995. "Cancer Screening by Primary Care Physicians: a Comparison of Rates Obtained from Physician Self-Report, Patient Survey ,a and Chart Audit." *American Journal of Public Health* 85(6): 795–800.

Mumtaz, Z. and S.M. Salway. 2007." Gender, Pregnancy and the Uptake of Antenatal Care Services in Pakistan." *Sociology of Health & Illness* 29(1): 1–26.

Mwifadhi, M., J.A. Schellenberg, A.K. Mushi, B. Obrist, H. Mshinda, M. Tanner and D. Schellenberg. 2007. "Factors Affecting Home Delivery in Rural Tanzania." *Tropical Medicine & International Health* 12(7): 862–72.

Orach, C.G.., D. Dubourg and V. De Brouwere. 2007. "Costs and Coverage of Reproductive Health Interventions in Three Rural Refugee-Affected Districts, Uganda." *Tropical Medicine & International Health* 12(3): 459–69.

Patel, H., M. Shafazand, M. Schaufelberger and I. Ekman. 2007. "Reasons for Seeking Acute Care in Chronic Heart Failure." *European Journal of Heart Failure* 9(6–7): 702–8.

Patel, V., S. Pednekar, H. Weiss, M. Rodriques, P. Barros, B. Nayak, V. Tanksale, B. West, P. Nevrekar, B.R. Kirkwood and D Mabey. 2005. "Why Do Women Complain of Vaginal Discharge? A Population Survey of Infectious and Psychosocial Risk Factors in a South Asian Community." *International Journal of Epidemiology* 34(4): 853–62.

Patel, V., H.A. Weiss, B.R. Kirkwood, S. Pednekar, P. Nevrekar, S. Gupte and D. Mabey. 2006. "Common Genital Complaints in Women: the Contribution of Psychosocial and Infectious Factors in a Population-Based Cohort Study in Goa, India." *International Journal of Epidemiology* 35(6): 1478–85.

Population Family Planning Committee Development Department (CHINA POPIN). 2006. "Population and Family Planning Statistical Report: Sampling Investigation Data." Retrieved August 26, 2007. <http://www.cpirc.org.cn/tjsj/tjsj-cd-detail11.asp?id=8124>.

Rodriguez, R.M., M. Passanante, M.A. Phelps, G. Dresden, K. Kriza, M. Carrasco and J. Franklin. 2001. "Delayed Emergency Department Presentation in Critically Ill Patients." *Critical Care Medicine* 29(12): 2318–21.

Ryan, C.A., B.N. Courtois and S.E. Hawes. 1998. "Risk Assessment, Symptoms, and Signs As Predictors of Vulvovaginal and Cervical Infections in an Urban US STD Clinic: Implications for Use of STD Algorithms." *Sexually Transmitted Infections* 74(6): S59–76.

Schettino, M.R., M.A. Hernández-Valero, R. Moguel, R.A. Hajek and L.A. Jones. 2006. "Assessing Breast Cancer Knowledge, Beliefs, and Misconceptions among Latinas in Houston, Texas." *Journal of Cancer Education* 21(1 Suppl.): S42–6.

The People Net. 2005. "Programme of Pregnancy Women Mortality Rate Reduction and New Birth Infant Lockjaw Alleviation." Retrieved February 3, 2010. <http://politics.people.com.cn/GB/1027/3163685.html>.

Welsh, B., A. Howard and K. Cook. 2004. "Vulval Itch." *Australian Family Physician* 33(7): 505–10.

World Health Organization (WHO). 1994. "The Scope of Reproductive Health Work in the WHO Western Pacific Region." World Health Organization, Regional Office for the Western Pacific, Manila. Retrieved February 3, 2010. <http://www.wpro.who.int/sites/rph/>.