

HEALTH-CARE UTILIZATION AMONG EMPTY-NESTERS IN THE RURAL AREA OF A MOUNTAINOUS COUNTY IN CHINA

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The Chinese have traditionally been happy with big-sized families, which often placed several generations under one roof. But now great changes have taken place. The number of empty-nest families, in which there is only an elderly couple or one aged person, is on the rise,¹ particularly in some inland mountainous rural areas. This occurrence is closely related to China's overall economic environment, due to the accelerated process of urbanization, the imbalance of economic development between the inland and coastal regions, and the flow of rural surplus labor to big cities on the eastern coast.² Some farmers have established their careers in those cities and become urban dwellers, while their parents are left behind in rural homes.

Rural areas are frequently characterized by poorly developed, fragile economic infrastructures, resulting in fewer available per capita hospital beds, doctors, nurses, and other health-care services.³ In addition to socioeconomic hardships, rural residents face substantial physical barriers,⁴ including a lack of public transportation, difficult terrain, and long distances to services.^{3,5} It is even worse in the inland mountainous rural areas in China, where the elderly depend on their children to take care of them, and their income comes mainly from their children. They also pay most of their medical costs out of pocket because they are not insured. Studies show that the financial situation of empty-nest dwellers is worse in rural areas than in cities.^{1,6} They are not as strong physically, and their children cannot take care of them when they get sick.⁶ Studies also showed that empty-nesters, particularly the single ones, often feel lonely.^{1,6} The current high costs of medical treatment and poor health constitute the primary cause of elderly empty-nesters' concerns for the future.

The health-care system should offer equal access to health care according to need. Although numer-

ous studies have examined factors associated with this goal among different population subgroups, including the elderly,³ unemployed,⁷ mentally ill,⁸ uninsured,⁹ immigrant,¹⁰ and those belonging to a racial or ethnic minority,¹¹ few reports to date have investigated the equity of health-care utilization among elderly empty-nesters in rural areas.

OBJECTIVES

Our first aim was to compare health-care utilization and perceived unmet needs between elderly empty-nesters in rural areas and those in cities to identify if the rural empty-nesters have equitable access to health services. Secondly, we compared the factors associated with health-care utilization between the two groups. Some barriers to treatment are multifactorial and likely include provider and patient variables, such as worrying about cost, inability to find out where to go for help, and poorly organized and inadequately funded health-care systems.⁸ Finally, we investigated primary barriers to care from the elderly empty-nesters' perspective. Information about barriers from the patient's perspective may assist us in developing effective policies to decrease unmet need.

METHODS

This study used data from elderly people who resided in the rural areas of Yuan'an County, which is an inland mountainous county in Hubei province. With the accelerated process of urbanization and the flow of rural surplus labor to big cities on the eastern coast, more and more young farmers in rural areas have established their careers in big cities and become urban dwellers, while their aging parents are left behind in their rural homes. The overall population in the county is decreasing, but the number of elderly empty-nesters is increasing.

Participant recruitment

A standardized questionnaire was sent to a randomized sample of 550 rural people aged 60 years and older who were living in the rural areas of Yuan'an County in 2006. Our study utilized a case-control design to recruit a sample of elderly empty-nesters and a comparison group of elderly non-empty-nesters. People were classified as either "empty-nest group" or "non-

empty-nest group” by asking, “Are you living with any of your children?” If the answer was “no,” the person was identified as an empty-nester.

Outcome variables

Two measures of health service utilization were assessed, including visits to or telephone contact with physicians at least once during the three months before answering the questionnaire and hospital admissions at least once during the three months before the survey. Contact with a physician was ascertained by asking, “In the past three months, how many times have you seen or talked on the telephone about your physical, emotional, or mental health with doctors?” The answers were measured dichotomously, and informants were categorized as “zero” or “any.” For hospital admissions, the question was, “In the past three months, have you been a patient overnight in a hospital?” We investigated unmet need by asking, “During the past three months, was there any time you did not get as much care for physical or mental problems as you needed or had delays in getting care?” Patients answering affirmatively were coded as having unmet needs and were asked whether they perceived that barriers to adequate health treatment applied to them.

Predictor variables

Information was collected about factors that may affect health-care utilization, including age, gender, education (post-secondary school, secondary school, primary school, other education, no education), marital status (currently married, never married, divorced, separated, widowed), income (very low, low, middle, high, very high), social supports (social supports were assessed using the social support scale; the scores for the scale range from 12 to 65, with higher scores indicating more social support), insurance status (Medicare, labor insurance, new rural cooperative medical system, uninsured), distance to the caregiver (very far, far, middle, short, very short), attitudes toward the health-care system (very bad, bad, fair, good, very good), familiarity with the health-care system (very little, little, fair, much, very much), confidence in the health-care system (very little, little, fair, much, very much), self-perceived health status (the 36-item Short-Form Health Status Survey [SF-36] was used to measure self-perceived health status in the past four weeks; the global physical and mental health scores were examined in this analysis, and the scores for each scale ranged from 0 to 100, with higher scores indicating better functioning), and chronic health conditions present out of a list of 28 conditions (e.g., high blood pressure, heart disease, diabetes, chronic

bronchitis, asthma, cancer, arthritis, and stomach or intestinal ulcers).^{7,12-30} Additional questions concerned whether the respondents had perceived a need for care for self-identified symptoms during the last three months. For example, we asked, “During the last three months, have you felt a need to consult a doctor for any of these symptoms (dizziness, problems with eyes, headache, tiredness, sleeping problems, fever, nervous problems, feeling short of breath, chest pain, pain or stiffness of the hip, knee, or leg, cough, exhaustion, feeling down and gloomy, feeling stressed, stomach pain or having problems concentrating, skin changes, weight loss, urinary problems, problems with bowel movements, or other symptoms)?”

Statistical analysis

Chi-Square tests were used to compare the health-care utilization and unmet care needs between the empty-nest and non-empty-nest groups. And then T and Chi-Square tests were used to compare factors that may affect health-care utilization between the two groups. In Chi-Square tests, Fisher’s exact test was computed when a table had a cell with an expected frequency of less than five. In all cases, results were reported in terms of two tailed *p*-values. After descriptive analyses of perceived barriers to health needs, a factor analysis was conducted to group the perceived barriers into meaningful domains. Estimates were calculated by using SPSS Version 10.0.³¹

RESULTS

Participants

A total of 550 respondents were contacted about the study. We excluded results from 60 (10.9%) respondents because of missing data. The resulting data included 250 (51.0%) elderly empty-nesters and 240 (49.0%) non-empty-nesters.

Health-care utilization

The rate of visiting or telephoning a physician during the past three months was about 39.2% among the empty-nesters and 50.8% among the non-empty-nesters. The empty-nesters had visited or telephoned a physician less than the non-empty-nest group ($p < 0.05$) (Table 1). But the hospitalization rate during the past three months (8.0% among the empty-nesters and 8.3% among the non-empty-nesters) did not differ significantly ($p > 0.05$) (Table 1).

Perceived unmet care needs

The rate of reporting that one had abstained from seeking care despite a perceived need for care in the past

Table 1. Health-care utilization between elderly empty-nesters and non-empty-nesters

Degree of contact with health service	Empty-nest group (n=250) (percent)	Non-empty-nest group (n=240) (percent)	Significance
Contacted or telephoned a physician more than once during the past three months	39.2	50.8	$p < 0.05$
Hospitalized for health problems during the past three months	8	8.3	Not significant

NOTE: *P*-values are for differences between categories, based on Chi-Square tests.

three months was about 40.0% among the empty-nest group and 29.2% among the non-empty-nest group. The empty-nest group was significantly more likely to report overall unmet health-care needs than the non-empty-nest group ($p < 0.05$) (Table 2).

Predictor variables

Ages of these respondents ranged from 60 to 80 years (mean = 69.52 ± 6.14 years) for the empty-nest group and from 60 to 82 years (mean = 70.33 ± 9.69 years) for the non-empty-nest group. *T* and Chi-Square tests showed that there were no significant differences between the empty-nest and non-empty-nest groups in gender, age, educational level, marital status, insurance coverage, distance to the caregiver, experiences with the health-care system, familiarity with the health-care delivery system, and confidence in the health-care system ($p > 0.05$). The empty-nest group had a lower income in comparison with the non-empty-nest group: 16.8% vs. 4.2% reported very low; 22.0% vs. 8.3% reported low; 34.4% vs. 58.3% reported fair; 16.8% vs. 12.5% reported high; and 10.0% vs. 16.7% reported very high. The empty-nesters also reported less social support (mean = 39.96 ± 8.09 vs. 42.46 ± 5.23). It was found that lower mental health scores (confidence interval [CI] = 5.36, 12.12, $t = 5.07$, degree of freedom [df] = 472.76, $p < 0.01$) and physical health scores (CI = 7.03, 13.50, $t = 6.24$, df = 488, $p < 0.01$) from the SF-36 were significantly associated with empty-nest conditions (Table 3). A significant association was also found between the empty-nest group and a proclivity toward chronic conditions ($1\chi^2 = 8.56$, df = 1, $p < 0.01$)

(Table 3). The empty-nesters had identified themselves as having a need to contact a physician for specific symptoms during the past three months more often than the non-empty-nest group ($2\chi^2 = 4.50$, df = 1, $p < 0.05$) (Table 3).

Perceived barriers regarding unmet needs

Among the 100 empty-nesters who perceived that their needs for health treatment were not being met (Table 4), the most commonly reported barriers were cost (64%), lack of coverage by the health plan (37%), and inability to find someone to take the individual to the provider's office (28%). Those who worried about the cost, in comparison with those who did not endorse cost as a barrier, were more likely to have lower income (very low income: 38 vs. 2; low income: 10 vs. 10; fair income: 17 vs. 23) ($3\chi^2 = 26.7$, df = 2, $p < 0.001$) and be uninsured (38 people [58.5%] vs. 10 people [28.6%]) ($4\chi^2 = 9.6$, df = 2, $p < 0.01$). Those who could not find someone to take him to the provider's office were more prone to having less social support (mean = \pm SD score 35.8 ± 6.1) than those who didn't indicate this barrier (mean = \pm SD score 38.6 ± 3.6) ($t = 2.185$, df = 98, $p < 0.05$).

To investigate whether subgroups or factors of reasons existed, a principal components analysis was used to extract four components with eigenvalues greater than 1.0 followed by a varimax rotation. As shown in Table 5, on the basis of factor analysis, perceived barriers fell into four groups: access, social attitudes, services, and cost.

Table 2. Perceived unmet health-care needs between elderly empty-nesters and non-empty-nesters

	Unmet need (percent)	Met need (percent)	Significance
Non-empty-nest group	29.2	70.8	$p < 0.05$
Empty-nest group	40	60	

NOTE: *P*-value is for difference between categories, based on Chi-Square tests.

Table 3. Factors related to the equity of health-care utilization between elderly empty-nesters and non-empty-nesters

Factors	Empty-nest group (n=250, percent or mean ± SD score)	Non-empty-nest group (n=240, percent or mean ± SD score)	Significance
Gender			Not significant
Male	44	37.5	
Female	52	45.8	
Age (mean ± SD years)	69.52±6.14	70.33±9.69	Not significant
Educational level			Not significant
Post-secondary school	8.8	8.3	
Secondary school	22.8	25	
Primary school	52.8	54.2	
Other education	11.2	8.3	
No education	4.4	4.2	
Marital status			Not significant
Married	76	79.2	
Never married, divorced, separated	4	4.2	
Widowed	20	16.7	
Income			p<0.01
Very low	16.8	4.2	
Low	22	8.3	
Middle	34.4	58.3	
High	16.8	12.5	
Very high	10	16.7	
Social support scale (mean ± SD score) ^a	39.96±8.09	42.46±5.23	p<0.01
Insurance			Not significant
Medicare	22.8	26.3	
Labor insurance	2	2.5	
New rural cooperative medical system	42.4	45	
Uninsured	32.8	26.3	
Distance to the caregiver			Not significant
Very far	12	12.5	
Far	12	16.7	
Fair	16	16.7	
Short	24	25	
Very short	36	29.2	
Attitude toward the health-care system			Not significant
Very bad	0	0	
Bad	4.2	4	
Fair	37.5	40	
Good	41.7	44	
Very good	16.7	12	
Familiarity with the health-care delivery system			Not significant
Very little	28	29.2	
Little	16	12.5	
Fair	25.6	25	
Much	13.2	16.7	
Very much	17.2	16.7	
Confidence in the health-care system			Not significant
Very little	0	0	
Little	8	4.2	
Fair	48	54.2	
Much	36	33.3	
Very much	8	8.3	

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Table 3 (continued). Factors related to the equity of health-care utilization between elderly empty-nesters and non-empty-nesters

Factors	Empty-nest group (n=250, percent or mean ± SD score)	Non-empty-nest group (n=240, percent or mean ± SD score)	Significance
Indicators of health			
36-item short-form health survey (mean ± SD score) ^b			
Physical health subscale	59.26±17.92	69.52±18.51	p<0.01
Mental health subscale	68.64±17.68	77.38±20.34	p<0.01
Any chronic conditions			p<0.01
Some	92	83.3	
None	8	16.7	
Identified themselves as having a need to contact a physician for specific symptoms during the past three months	89.2	82.1	p<0.05

NOTE: P-values are for differences between categories, based on T and Chi-Square tests.

^aScores ranged from 0 to 100, with higher scores indicating better health.

^bScores ranged from 12 to 65, with higher scores indicating more social support.

SD = standard deviation

Table 4. Perceived barriers to health care among the 100 empty-nesters who felt their needs for health treatment were not being met

Barrier	Percent
Worried about the cost	64
Insurance would not pay for treatment	37
Could not find someone to take you to the provider's office	28
Could not find out where to go for help	24
Waiting time for an appointment was too long	24
Bad experience with health-care system	21
Could not get through to the provider's office on the telephone	18
Took too long to get to the provider's office	18
Did not think visiting a doctor would help	14
Could not contact a familiar physician	12

DISCUSSION

The results showed that the empty-nest group was predisposed to poor mental and physical health according to the scores from the mental and physical subscales of SF-36, and more inclined to report long-standing illness when compared to the non-empty-nest group. The empty-nest group was also predisposed to feeling lonely because of living without their children and having less social support, which may be associated with their poor mental health. Organizing senior associations could help improve the empty-nesters' mental health. Also, more of the empty-nesters than the non-empty-nesters identified themselves as needing to contact a physician for specific symptoms. Despite these results of ill health and a greater need to contact

Table 5. Principal-component analysis of perceived-barriers factor loadings among 100 empty-nesters who felt their needs for health treatment were not being met

Barrier	Access	Social attitudes	Service	Cost
Worried about the cost	-.292	-.216	-.305	.737
Insurance would not pay for treatment	-.060	.019	.002	.929
Could not find out where to go for help	.955	-.075	-.040	-.088
Could not contact a familiar physician	-.070	.938	-.116	.053
Did not think visiting a doctor would help	-.026	.959	-.131	-.010
Bad experience with health-care system	-.042	.875	.061	-.205
Took too long to get to the provider's office	.915	-.034	-.039	-.089
Took too long to get the treatment	-.151	-.045	.891	-.192
Could not get through to the provider's office on the telephone	-.023	-.115	.903	-.005
Nobody to take you to the provider's office	.929	-.034	-.109	-.128

NOTE: 83.78% of variance was explained: 29.6% for access, 27.1% for social attitudes, 20.2% for service, and 9.7% for cost.

a physician, the empty-nesters were less likely than the non-empty-nesters to have consulted a physician. These results were consistent with the result that the empty-nest group was more likely to report unmet care needs than the non-empty-nest group.

Research indicates factors that may affect health-care utilization include age, gender, income, education, marital status, social support, insurance coverage, distance to the caregiver, attitudes toward the health-care system, familiarity with the health-care system, and confidence in the health-care system.^{7,12-30} In this study, the results showed that there was no significant difference between the empty-nesters and the non-empty-nesters in gender, age, educational level, marital status, insurance coverage, distance to the caregiver, attitudes toward the health-care system, familiarity with the health-care delivery system, and confidence in the health-care system. But the empty-nest group had lower income and less social support in comparison with the non-empty-nest group. The empty-nest group may receive less economic support and other support from their children than the non-empty-nest group, which may be associated with their lower income and decreased social support. Therefore, it was determined that the lower risk of foregoing contact with a physician and higher risk of unmet care needs among the empty-nest group may be associated with their lower income and decreased social support.

Our findings about barriers provide directions for interventions designed to decrease unmet need in primary care. Respondents reported substantial difficulty in making a health-care appointment, reporting access, social attitudes, service, and cost as barriers.

Regarding access, of all the respondents, 28% could not find someone to take them to the provider's office (possibly indicative that these empty-nesters could not go to the provider's office due to bad physical conditions and could not get their children's help as soon as possible because they lived without their children); 24% could not find out where to go for help (possibly indicative that their primary-care providers did not provide health treatment referral information); and 18% thought it took too long to get to the provider's office (possibly indicative that there was inadequate transportation and limited health-care supply in the rural areas). Regarding service, 24% could not get an appointment soon enough, and 18% could not get through to the provider's office on the telephone. As for social attitudes, 21% had negative attitudes toward the health-care system, and 14% did not think visiting a doctor would help. Cost barriers also were commonly endorsed, with 64% worried about the cost and 37%

lacking proper insurance to pay for treatment. Those who worried about the cost, in comparison with those who did not indicate cost as a barrier, were more likely to have lower income and be uninsured. So we concluded that the financial situation and insurance coverage was disadvantageous to the rural empty-nesters.

The rural empty-nesters' poor economic status as a barrier is difficult to resolve at the policy level. Structural barriers to access provide a greater opportunity for public policy reform and intervention.³ These barriers are inherent in the service delivery system and the environment itself.³ Our results imply that increasing the insurance coverage and building community health centers could help improve initial telephone access to services, establish more timely appointments, get families visiting medical services, and lower costs for health care. We believe that this finding is encouraging, because community health centers might be easier to implement than decreasing economic barriers to health treatment.

CONCLUSIONS

The findings from this study demonstrate that despite ill health and an increased need to contact a physician, empty-nesters were less likely than non-empty-nesters to consult a physician and more likely to report being unable to obtain needed care. Our results also showed that the difference in health-care utilization between the two groups was associated with a difference in income and social support. The empty-nest group had lower income and less social support than the non-empty-nest group. Furthermore, although discussion of barriers to care has traditionally centered on economic factors, our results suggest that other factors—such as not being able to find someone to take them to the provider's office and not being able to get through on the telephone—are also important barriers that can be more readily dismantled. Possible measures for ensuring access to health care and improving the physical and mental health among rural empty-nesters include increasing insurance coverage, building a community health center, and organizing senior associations in rural areas.

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REFERENCES

1. Huang RL. The family condition of empty-nest households in China. *Population & Economics* 2005;2:57-62.
2. Du P, Ding ZH, Li QM, Gui JF. The effect of children's work in other places on the parents. *Population Research* 2004;28:44-52.
3. Goins RT, Williams KA, Carter MW, Spencer M, Solovieva T. Perceived barriers to health care access among rural older adults: a qualitative study. *J Rural Health* 2005;21:206-13.
4. Auchincloss AH, Hadden W. The health effects of rural-urban residence and concentrated poverty. *J Rural Health* 2002;18:319-36.
5. Bull CN, Krout JA, Rathbone-McCuan E, Shreffler MJ. Access and issues of equity in remote/rural areas. *J Rural Health* 2001;17:356-9.
6. Zhang Y, Tang GF, Zhu MZ. Problems and countermeasures of empty-nest households. *Soft Science of Health* 2005;19:285-6.
7. Ahs AM, Westerling R. Health care utilization among persons who are unemployed or outside the labour force. *Health Policy* 2006;78:178-93.
8. Craske MG, Edlund MJ, Sullivan G, Roy-Byrne P, Sherbourne C, Bystritsky A, et al. Perceived unmet need for mental health treatment and barriers to care among patients with panic disorder. *Psychiatr Serv* 2005;56:988-94.
9. Callahan ST, Cooper WO. Uninsurance and health care access among young adults in the United States. *Pediatrics* 2005;116:88-95.
10. Wu Z, Penning MJ, Schimmele CM. Immigrant status and unmet health care needs. *Can J Public Health* 2005;96:369-73.
11. Quan H, Fong A, De Coster C, Wang J, Musto R, Noseworthy TW, et al. Variation in health services utilization among ethnic populations. *CMAJ* 2006;174:787-91.
12. Sproston KA, Pitson LB, Walker E. The use of primary care services by the Chinese population living in England: examining inequalities. *Ethn Health* 2001;6:189-96.
13. Mayberry RM, Mili F, Ofili E. Racial and ethnic differences in access to medical care. *Med Care Res Rev* 2000;57 Suppl 1:108-45.
14. Fiscella K, Franks P, Doescher MP, Saver BG. Disparities in health care by race, ethnicity, and language among the insured: findings from a national sample. *Med Care* 2002;40:52-9.
15. Frisbie WP, Cho Y, Hummer RA. Immigration and the health of Asian and Pacific Islander adults in the United States. *Am J Epidemiol* 2001;153:372-80.
16. Li PL, Logan S, Yee L, Ng S. Barriers to meeting the mental health needs of the Chinese community. *J Public Health Med* 1999;21:74-80.
17. Hoffman-Goetz L, Breen NL, Meissner H. The impact of social class on the use of cancer screening within three racial/ethnic groups in the United States. *Ethn Dis* 1998;8:43-51.
18. Lee MC. Knowledge, barriers, and motivators related to cervical cancer screening among Korean-American women. A focus group approach. *Cancer Nurs* 2000;23:168-75.
19. Ma GX. Barriers to the use of health services by Chinese Americans. *J Allied Health* 2000;29:64-70.
20. Davis SK, Liu Y, Gibbons GH. Disparities in trends of hospitalization for potentially preventable chronic conditions among African Americans during the 1990s: implications and benchmarks. *Am J Public Health* 2003;93:447-55.
21. Jang M, Lee E, Woo K. Income, language, and citizenship status: factors affecting the health care access and utilization of Chinese Americans. *Health Soc Work* 1998;23:136-45.
22. Tang TS, Solomon LJ, McCracken LM. Cultural barriers to mammography, clinical breast exam, and breast self-exam among Chinese-American women 60 and older. *Prev Med* 2000;31:575-83.
23. Williams DR, Collins C. Racial residential segregation: a fundamental cause of racial disparities in health. *Public Health Rep* 2001;116:404-16.
24. LaVeist TA. Disentangling race and socioeconomic status: a key to understanding health inequalities. *J Urban Health* 2005;82(2 Suppl 3):iii26-34.
25. Christensen B. Payment and attendance at general practice preventive health examinations. *Fam Med* 1995;27:531-4.
26. Carr-Hill RA, Rice N, Roland M. Socioeconomic determinants of rates of consultation in general practice based on fourth national morbidity survey of general practices. *BMJ* 1996;312:1008-12.
27. Field KS, Briggs DJ. Socio-economic and locational determinants of accessibility and utilization of primary health-care. *Health Soc Care Community* 2001;9:294-308.
28. Iron K, Goel V. Sex differences in the factors related to hospital utilization: results from the 1990 Ontario Health Survey. *J Womens Health* 1998;7:359-69.
29. Saarento O, Rasanen S, Nieminen P, Hakko H, Isohanni M. Sex differences in the contact rates and utilization of psychiatric services. A three-year follow-up study in northern Finland. *Eur Psychiatry* 2000;15:205-12.
30. Baker D, Mead N, Campbell S. Inequalities in morbidity and consulting behaviour for socially vulnerable groups. *Br J Gen Pract* 2002;52:124-30.
31. SPSS, Inc. SPSS: Version 10.0 for Windows. Chicago: SPSS, Inc.; 1999.