Farmers' Cognition and Participation Willingness about New Rural Cooperative Medical System in Western Region

——A Case of Guangan and Dazhou Areas in Sichuan Province

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Abstract　According to the data of questionnaire survey on farmers' cognition and participation willingness about the New Cooperative in some townships of Guangan and Dazhou Cities of Sichuan Province in the year 2008，farmers' cognition about the New Rural Cooperative Medical System is analyzed by using the literatures，field investigation，semi-structured interviews，group discussion and other methods. At the same time，SPSS13.0 statistical software is used to carry out the Logistic Regression Analysis on the factors influencing the participation willingness of sample households. Result shows that although the New Rural Cooperative Medical System has been implemented throughout China for 6 years，there are only 57.75% households in underdeveloped western regions who know about the New Rural Cooperative Medical System quite well. Family income，expense，education degree，and comprehension degree of the New Rural Cooperative Medical System are the main factors affecting the farmers' participation willingness. Based on this，countermeasures are put forward in order to promote the farmers to participate in the New Rural Cooperative Medical System.

Key words　New Rural Cooperative Medical System of China；Willingness；Cognition；Logistic Model；China

New Rural Cooperative Medical System，short for the New Cooperative，is a cooperative medical care system in rural areas in China，which mainly concerns about the comprehensive arrangement for serious disease under the organization and support of government，the extensive financing of the collective and government and the voluntary participation of farmers. Since the first half year of 2003，China has begun to carry out the experimental work of New Cooperative throughout the country，which plays an important role in solving the farmer's poverty caused by diseases. As a policy benefiting the people，the New Cooperative can make remarkable and effective development only when it is supported by the farmers.

Scholars at home and abroad have carried out researches on financing level，reimbursement proportion and extension operation and have achieved certain results[1-6]. However，their researches mainly focus on the analysis of macroscopic perspective and few are about microcosmic level. And there are even less researches on the participation willingness of farmers. Therefore，taking Guangda and Dazhou Areas in Sichuan Provinces as examples，farmers' cognition about the New Cooperative is analyzed and Logistic Model is used to study on the factors affecting the farmers' participation willingness of the New Cooperative，so as to propose the policy suggestions on promoting the New Cooperative.

1　General situation of the research region

Guangan and Dazhou（30°75′ – 32°07′N，106°94′ – 108°

06′E）are located in eastern and northeastern areas of Sichuan Province，respectively，with the total area of 22.9 thousand square kilometers. The two regions are mostly mountainous and hilly areas，connecting Ankang City of Shaanxi Province and Shiyan City of Hubei Province in the north，Chongqing City in the east and north，Suining City and Nanchong City in the west. Restricted by the geographical and traffic conditions，economic development there is lagging behind. Guangan and Dazhou together have 294 townships，189 towns，5 896 villages and in all 10 990 thousand people in the year 2008.

2　Data collection and research method

2.1　Data collection　Data are from 2008 questionnaire survey on farmers' cognition and participation willingness about the New Cooperative in some townships of Guangan and Dazhou Cities of Sichuan Province. A total of 600 questionnaires are sent out and 568 available questionnaires are retrieved including 16 towns and villages in Guangan，Sichuan Province，so the efficiency of the questionnaire is 94.67%. Main content of this questionnaire includes the basic characteristics of peasant households，and peasants' cognition degree and participation willingness about the New Cooperative.

2.2　Research method　Based on the literatures，field investigation，semi-structured interviews，group discussion and other methods，research status of this thesis is discussed，as well as the peasants' comprehension degree and participation willingness about the New Cooperative in investigation areas. Secondly，empirical analysis is carried out after the treatment of investigation data. Through the comparative analysis on the farmers' cognitive process，affective process and rational

process, factors affecting farmers' willingness to participate in the New Cooperative are discussed.

3 Analysis of the influencing factors of farmers' cognition and willingness about the New Cooperative

3.1 Characteristics of farmers' age and gender According to the age distribution of farmers, there are only 12 households below the age of 30, accounting for 2.11%, followed by those above the age of 60, accounting for 7.04%. Most of the peasant households are between the age of 30 and 60, occupying as high as 90.85% (Table 1). Since the management scale of peasant households is relatively small, there is surplus of labor force in rural households and the young people usually choose to work outside. Thus, the young households are relatively few in rural areas. According to the gender ratio, there are 540 male and 28 female farmers among the total of 568 peasant households, accounting for 95.07% and 4.93%, respectively. In rural areas, the head of household is naturally the male. Investigation shows that male farmers are more willing to express their thoughts and are able to further explain their answers. Few of the households even dare to put forward their own views.

Table 1 Age distribution of the heads of sample households

Age	Population	Percentage in the investigated households∥%
≤30	12	2.11
31−40	116	20.42
41−50	212	37.33
51−60	188	33.10
≥61	40	7.04
Total	568	100

Note: Data are from the result of questionnaire investigation.

3.2 Education degree of the household head Education degree of the head of household has the characteristics of normal distribution. Among them, 8 people are illiterate, accounting for 1.41%; 78 people are high school graduates, accounting for 13.73%; and most of the household heads are graduated from primary or junior high schools, occupying 84.86%. In general, the overall cultural quality of peasant households is not low. And if taking into account the young migrant workers, the overall cultural quality is even higher.

Table 2 Education degree of the heads of sample households

Education degree	Population	Percentage in the investigated households∥%
Illiteracy	8	1.41
Primary school	198	34.86
Junior middle school	284	50.00
Senior middle school	78	13.73
Total	568	100.00

3.3 Status of sample households Among the total of 568 households, the smallest scale is only 2 people and the largest is 9 people. Household having 3−4 members is the most, accounting for 55.28%, followed by the household with more than

6 members, accounting for 24.65%. Number of households having 5 and less than 3 members reaches 104 and 10, respectively. Research shows that the labor force engaged in agricultural production in sample households are 3 people on average. Among them, there are 326 households having 2 labor forces (Table 3). Therefore, it can be concluded that the scale of labor force is relatively small in household, which is the basic unit of the rural economy.

Table 3 Labor forces engaged in agricultural production in sample households

Labor forces	Population	Percentage in the investigated households∥%
1	18	3.17
2	326	57.39
3	100	17.61
4	86	15.14
≥5	38	6.69
Total	568	100.00

3.4 Economic income of peasant households Among the sample households, there are only 76 households entirely relying on the land, accounting for 13.38%; Part-time households reach 492, occupying 86.62%. Among the 568 peasant households investigated, monthly family income shows the characteristics of normal distribution: 2 501−3 500 yuan for 60 households, above 3 500 yuan for 74 households, and below 500 yuan for 86 households. Most of the households have the income of 501−1 500 yuan or 1 501−2 500 yuan, accounting for 32.75% and 28.52%, respectively. It can be seen that the monthly income of sample households is relatively low.

3.5 Farmers' cognition about the New Cooperative In order to better understand the farmers' cognition about the New Cooperative, the questionnaire has designed both of the subjective and objective cognition investigation. Subjective cognition is the judgment of comprehension degree about the New Cooperative by sample households themselves; while objective cognition is the five "True or False" tests about the New Cooperative. According to the investigation result of subjective cognition about the New Cooperative, 3.17% households haven't heard about the New Cooperative; 40.85% think they know most of the contents; and only 16.90% say they know it very well. According to the result of objective cognition, 44.02% sample households can fill more than 4 tests (Table 4). Investigation result also shows that attention degree of households when participating the New Cooperative is in the order of fund safety > reimbursement proportion > trouble in reimbursement > medical level > service attitude. Households are strongly worried about the safety of cooperative medical fund and 54.58% of them express their worries.

In the investigation on education degree and cognition level, 77.78% of the farmers having not heard of the New Cooperative are graduates from primary school or are illiterate persons. 56.52% of the farmers having heard of, but do not know the details are graduates below the primary school; and 45.24% of the farmers knowing a small number of the content are graduates below the primary school. Among the farmers

knowing most of the contents, 77. 59% are graduates above the junior middle school. And among the farmers knowing the details, 75.00% are graduates above the junior middle school. As for the farmers having the same education degree but different cognition levels, the percentages of "not heard; heard of, but not knowing the details; knowing a small number of content" and "knowing most of content; very familiar" are decreasing (Table 5). This indicates that the education degree affects the farmers' cognition about the New Cooperative.

Table 4　Farmers' cognition about the New Cooperative

Item	Subjective cognition		Item	Objective cognition	
	Population	Percentage//%		Population	Percentage//%
Not heard	18	3.17	1 correct answer	0	0
Heard of, but not knowing the details	138	24.30	2 correct answer	48	8.45
Knowing a small number of content	84	14.79	3 correct answer	270	47.54
Knowing most of content	232	40.85	4 correct answer	160	28.17
Very familiar	96	16.90	All correct	90	15.85
All wrong	0	0			

Table 5　Education degree and cognition level

Education degree	Not heard		Heard of, but not knowing the details		Knowing a small number of content		Knowing most of content		Very familiar	
	Popul-ation	Percen-tage//%	Popul-ation	Percen-tage//%	Popul-ation	Percen-tage//%	Popul-ation	Percen-tage//%	Popul-ation	Percen-tage//%
Illiteracy	0	0.00	4	2.90	0	0.00	0	0.00	4	4.17
Primary school	14	77.78	74	53.62	38	45.24	54	22.41	20	20.83
Junior middle school	4	22.22	46	33.33	42	50.00	134	57.76	58	60.42
Senior middle school	0	0.00	14	10.15	4	4.76	46	19.83	14	14.58

3.6　Farmers' participation willingness about the New Cooperative　In the investigation, most of the households actively participate in the New Cooperative. Among the total of 568 sample households, 542 households are willing to participate in the New Cooperative, accounting for 95. 42%. Therefore, it can be concluded that farmers' willingness to participate in the New Cooperative is relatively positive.

4　Influencing factors of farmers' participation willingness about the New Cooperative

4.1　Model selection　The Binary Logistic Model is adopted to analyze the factors affecting the farmers' participation willingness about the New Cooperative. And it is assumed that the farmers' participation willingness about the New Cooperative is affected by the personal characteristics of peasant households, the family characteristics and the technical and economic factors, which is reported in Table 6. The following function form shows the relationship between farmers' participation willingness about the New Cooperative and its influencing factors:

Farmers' participation willingness about the New Cooperative = f (personal characteristics of peasant households, the family characteristics, the technical and economic factors and other factors) + random disturbance term.

Table 6　Definition of relevant variables

Variable name	Variable definition
Age	Below the age of 30　=1;31 −40　=2;41 −50　=3;51 −60　=4;above the age of 60　=5
Gender	Male =1;Female =0
Education degree	Illiteracy　=1;Primary school =2;Junior middle school　=3;Senior middle school　=4;bachelor or above =5
Family income	Below 500 yuan =1;501 −1 500 yuan =2;1 501 −2 500 yuan =3;2 501 −3 500 yuan =4; above 3 500 yuan =5
Total population	2 people =1;3 people　=2;4 people　=3;5 people　=4;above 6 people　=5
Participation expense	Not high　= 1; not too high　= 2; normal　= 3; relatively high　= 4; very high　= 5
Compensation	Not high　= 1; not too high　= 2; normal　= 3; relatively high　= 4; very high　= 5
Comprehension degree of the New Cooperative	Not knowing =1;not familiar　=2;normal　=3;relatively familiar　=4;very familiar =5
Effects of New Cooperative on poverty relieve	No effect　=1;small effect =2;normal　=3;some effects =4;great effect =5

Since the willingness can hardly be expressed and measured numerically, "0 −1" index method indicates the farmers' participation willingness about the New Cooperative; "1" means that the farmer is willing to participate in the New Cooperative; and "0" means that farmer is unwilling. Intention questionnaires are used to evaluate the farmers' participation willingness about the New Cooperative. Value range of variable in traditional regression model is within (− ∞ , + ∞); but the value range of variable in this research is within [0, 1]. Therefore, logistic regression model is adopted. Assuming that the probability of $y = 1$ is P, the probability becomes $P(y_i = 0 \mid x_i, \beta) = F(- x_i'\beta)$, when dependent variable is 1. The Maximum

Likelihood Estimate is used to evaluate the regression parameters of model. Hence, the Logarithm Likelihood Function is

$$P_t = F(\alpha + \sum_{i=1}^{m}\beta_j X_{ij}) = 1/[1 + \exp(-\alpha + \sum_{i=1}^{m}\beta_j X_{ij})] + e_i,$$

where P_t is the probability of farmers' willingness to participate in the New Cooperative, β_j is the regression coefficient of factor, m is the number of factors affecting the probability, X_{ij} is independent variable, representing the jth influencing factor, α is regression intercept, and e_i is random disturbance term.

4.2 Result analysis SPSS 13.0 statistical software is used to carry out the Logistic Regression Analysis on the investigation data of a total of 568 sample households. Standard level of variables is selected $a = 0.05$; and the standard level is rejected $a = 0.10$. At the same time, OR (Odds Ratio) is adopted to explain the variables in model, which is Exp(B). It represents a unit change in independent variable, or the change in OR compared with the references. Table 7 shows the result of model estimation.

(1) According to the relationship, variables, such as age, gender, participation expense and total population, have negative correlation with the participation willingness; while the education degree, family income, compensation, and the comprehension degree of the New Cooperative have positive correlation with the participation willingness.

(2) According to the significance level, family income, participation expense, and compensation are relatively significant; and the significance levels of the rest variables are relatively low.

(3) According to the result of model estimation, farmers' age is significant at 10% level, indicating that the participation possibility of household heads is getting smaller and smaller with the growth of age. This is because that the elderly may have relatively poor cognition about the New Cooperative and are hard to accept it.

Table 7 Estimation results of farmers' participation willingness model about the New Cooperative

Variable	B	S. E.	Wald	Sig.	Exp(B)
Age	−1.157 *	0.595	3.777	0.052	0.479
Gender	−0.206	0.334	0.381	0.537	0.814
Education degree	0.561 * *	0.248	5.097	0.024	1.752
Family income	5.425 * * *	1.766	9.434	0.002	0.804
Total population	−0.250	0.371	0.453	0.501	0.779
Participation expense	−2.083 * * *	0.759	7.528	0.006	1.525
Compensation	0.875 * * *	0.252	12.049	0.001	1.198
Comprehension degree of the New Cooperative	1.473 * *	0.650	5.137	0.023	1.363
Effects of New Cooperative on poverty relieve	3.049 * *	1.200	6.449	0.011	2.087
Constant term	−4.461	3.124	2.038	0.153	0.612

Note: *, * * and * * * mean significant at 10%, 5% and 1% levels, respectively.

(4) Coefficient of farmers' gender is −0.206. Just according to the regression coefficient, female is more inclined to participate in the New Cooperative than the male. But this factor is not significant in the model. Therefore, gender has no great impact on farmers' participation willingness about the New Cooperative.

(5) The higher the education degree is, the more willing the farmers are to participate in the New Cooperative, and *vice versa*. This further shows that participating in the New Cooperative is no longer a blind choice for peasant households at present. Households with higher education degree having relatively high ideological consciousness, are more easily to accept new knowledge, and are more likely to participate in the New Cooperative.

(6) With the increase of peasant households, possibility of participating in the New Cooperative is gradually enhancing. This indicates that farmers' participation willingness is greatly determined by the impact of the New Cooperative on sustainable income ability of households. Investigation indicates that farmers are mostly concerned about their sustainable income ability. And they are willing to participate in the New Cooperative if their sustainable income level is improved.

(7) Effect of total population is insignificant in the model. However, according to the regression coefficients and daily experiences, scale of family has no positive effect on the participation of the New Cooperative. Generally speaking, with the

expansion of family size, daily consumption of family is increasing. In order to ensure the level of life quality, more attentions are paid to the family income level, and income is increased considerably through household channel.

(8) Participation expense has negative effects on the farmers' participation willingness about the New Cooperative, but this factor is a very significant variable in the model. According to the result of model estimation, the lower the expense is, the more willing the peasants is to participate in the New Cooperative, and *vice versa*. This indicates that the participation behavior of farmers in the New Cooperative depends largely on the participation expense.

(9) With the rise of compensation amount, participation possibility of farmers is gradually increasing, indicating that the farmers' participation willingness is directly influenced by the effects of the New Cooperative on the economic status of peasant households. Investigation shows that farmers are willing to join in the New Cooperative if it can really effectively improve their level of health security and reduce the cost of diseases.

(10) Farmers' comprehension degree of the New Cooperative, as well as the effects of the New Cooperative on poverty relieve, has greatly promoted the participation of households. Under the significant level of 5%, coefficients of model are all positive, indicating that during the process of participation, farmers' comprehension degree of the New Cooperative, as well as the effects of the New Cooperative on poverty relieve,

has great impact on the participation behavior of farmers. The more they know about the New Cooperative, the more significant effect of poverty relieve they may receive. And therefore, farmers are more willing to join in the New Cooperative.

5　Conclusion and suggestion

Research result shows that 57. 75% households know about the New Cooperative quite well; education degree of farmers affects their cognition about the New Cooperative; participation willingness has negative correlation with the variables such as age and participation expense, and has positive correlation with the education degree, compensation, comprehension degree of the New Cooperative and so on. Whether the households take part in the New Cooperative or not is determined by the age, education degree, family income, participation expense, compensation level, comprehension degree of the New Cooperative, effects of New Cooperative on poverty relieve and so on. Among these factors, family income, participation expense and compensation are relatively significant in the model, which are 0. 002, 0. 006 and 0. 001, respectively.

According to the analysis result, suggestions are put forward to improve the new rural cooperative medical care in western China, such as further enhancing investment, improving compensation amount of cooperative medical service, consolidating the guidance of propaganda, enhancing the awareness of sickness insurance, carrying out more education and train-ing, improving the level of medical service, improving the construction of information system, advancing the overall planning, resisting the risk of serious illness, promoting new countryside construction, boosting the urban and rural harmonious development, and realizing the comprehensive medical insurance.

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西部地区农户对新型农村合作医疗认知与参与意愿研究
——以四川省广安和达州地区为例

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摘要 依据 2008 年四川省广安和达州市部分乡镇农民对新农合认知和参与意愿的问卷调查的数据,通过查阅大量文献资料、实地调查、半结构式访谈、小组访谈等方法对两地区部分村镇进行入户访谈和问卷调查,分析了农户对新型农村合作医疗的认知情况(包括农户的年龄和性别特征、农户户主的文化程度、农户的家庭状况、农户的经济收入、农户对新农合的认知和农户对新农合的参与意愿);同时,运用运用 SPSS13. 0 统计软件,利用 Logistic 模型研究了影响农户参与新型农村合作医疗意愿的因素。结果表明,尽管新型农村合作医疗已经在全国推行了 6 年之久,然而,在西部不发达地区,仅有 57.75% 的农户比较了解新型农村合作医疗;家庭收入、费用因素、对新农合运作的了解程度和文化程度都是影响农户新型农村合作医疗生产意愿的主要原因。在此基础上,提出了促进农户参与新型农村合作医疗展的对策建议。
关键词 新型农村合作医疗;意愿;认知;Logistic 模型

资源消耗农业的可持续经营——日本有机农业发展对中国的借鉴

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摘要 在界定了有机农业内涵的基础上,从 4 个方面分析了日本农业可持续经营的做法。一是介绍日本有机农业的组织管理机构及相关法律法规;二是简述日本有机农产品的认证程序,即确定生产计划,整理栽培管理记录,制作向登记认证机构提交的认证申请书,实地检查与判定,给予认证,完成认证后的业务;三是分析日本有机农业的经营情况,归纳了日本有机农产品流通的 6 种主要形式,总结了农产品流通与消费的 4 个基本特征,即注重食品的安全性、鼓励销售宅配化、推行订单产销、加强产销沟通交流;四是介绍日本有机农业的运行机制,重点介绍了其生产者 – 消费者“提携”系统。在考察日本与中国国情差异的基础上,从 3 个方面提出了日本有机农业发展经验对中国的启示,包括转变思想与观念、建立网状的有机农业协会、完善有机农产品管理制度等。
关键词 日本;有机农业;可持续性