

Research Article

An Analysis of the Determinants of the Satisfaction Rate of the “New Rural Farming Cooperative Medical System”

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Abstract: Based on the field-research data of Liaoning Province, this study probes into the determinants of the satisfaction rate of the “new rural farming cooperative medical system”. The research indicates that striking determinants include personal trait of farmers, medical services supply and subjective propensity factors, namely income, health level, medical service accessibility, reimbursement experience and hospitalization propensity. In addition, this study holds that at the present the main focus for the farmers is still the “the high cost of going to hospital”, therefore how to effectively control the behaviors of suppliers while boosting farmers’ demand capacity remains a linchpin to improve farmers’ satisfaction rate of the “new farming rural cooperative medical system”.

Keywords: Determinants, satisfaction rate, the New Rural farming Cooperative Medical System (NRCMS)

INTRODUCTION

During 30 years since the reform and opening up, Chinese economy has gained remarkable achievements; the living standard of people has advanced to a great extent, meanwhile, however, there still exists an obvious binary structural problem of urban-rural development imbalance. Therefore, in recent years the livelihood of rural area has become the focus of the government. To tackle the problems of “the high cost of going to hospital” and “the difficulty of going to hospital”, which concern farmers more, the Chinese government has piloted the “new rural cooperative medical system” (NRCMS) in rural areas since 2003. The reason why it’s called the NRCMS is that compared with the old rural cooperation medical system, the fund-raising now includes government subsidy, in addition to personal payment; governmental responsibility provides important fiscal guarantee for the sustaining development of the system. With the increase of payment level, the expansion of compensation range, the increase of compensation level and the perfecting of the supervision and management of the NRCMS, what are farmers’ reviews on the new system? Which factors affect farmers’ subjective judgments about the new system? Which problems still exist and why? This study will probe extensively into those proceeding questions.

Because medical insurance can effectively reduce the sum and ratio of self-payment, medical insurance system could spur customers to buy more sanitary products (Michael and Kathleen, 1997; McCall *et al.*, 1991). But if patients have to assume more medical service responsibilities themselves, then they will

substantially reduce their medical service expenditure (Manning *et al.*, 1987; Pauly, 2005). Foreign researches focus mainly on the influence of the NRCMS on the utilization of medical service, whereas researches on the determinants of the satisfaction rate of the NRCMS are mostly found in China. Given the short period of implementation of the NRCMS, relevant researches in China on the evaluation of the satisfaction rate of the NRCMS still need to be expanded and deepened. Here are some main domestic research conclusions. Duan *et al.* (2011) believed that payment level, such as reimbursement ratio and payment cap, service of designated medical institutions and intricacy of the formalities of reimbursement are the main determinants of farmers’ satisfaction rate. Fan *et al.* (2009) found that about 90.3% of the participants of the NRCMS are generally satisfied with the new system; farmers’ satisfaction rate with the service of medical institutions at all levels exceeds 80%. However, existing problems cannot be ignored, for example, the guarantee level of the new system is relatively low and grass-roots sanitary and medical service cannot meet farmers’ need in such aspects as technology, attitude and charges. The reasons for farmers’ dissatisfaction with sanitary institutions at village-and-town-level are technological, such as poor medical level, whereas with relatively big hospitals at county-and-upper-level are “over” service, additional charges and poor service attitude. Zhang and Tao (2011) used farmers in a city in Henan province as research objectives and found that the occupations of the participants of the NRCMS are notably negative-correlated to the overall satisfaction rate of the new system, whereas last year’s per capita income, expected payment sum, actual reimbursement ratio, initiative to join the new system and the availability of service in

the new system are notably positive-correlated to the overall satisfaction rate of the new system. It can be seen that the satisfaction rate of the NRCMS is closely related to farmers' benefits level, service level, etc.

Because the NRCMS is in a process of incessant perfection, farmers' evaluation on its satisfaction rate is a necessarily dynamic process, that is, farmers' evaluation on the new system will change according to the specific implementation result. Therefore, it's absolutely necessary to comprehensively review the determinants of the satisfaction rate. However, it's comparatively intricate to establish a satisfaction rate appraisal system, specifically involving the selection of appraisal index, the setup of weight, appraisal standard and etc. (Wang and Zhang, 2008; Ji and Long, 2010; Wang *et al.*, 2011). Therefore, this study doesn't involve the design of the appraisal system; instead, based on different factors of farmers' needs such as personal trait and medical service experience, utilizing research data of two sections of Liaoning province in 2008 and Dalian city in 2012, it focuses on the review of the determinants of the satisfaction rate of the new system from different perspectives to provide reference for improving farmers' satisfaction rate evaluation. The research date of Dalian in 2012 could better be used to review the subjective propensity determinant of farmers' satisfaction rate, such as reimbursement experience, hospitalization direction propensity and etc.

DATA DESCRIPTION AND MODEL SPECIFICATION

The main sources of this research are:

- Questionnaire, "the urban-rural medical care and health" led by Liaoning statistics bureau in 2008. The questionnaire is designed with probability proportional sampling for 20 counties and 2 communities of each county are randomly sampled. The urban sample is inclusive of 4280 families with 12 826 people and the rural sample is inclusive of 5 319 families with 17 515 people. The questionnaire focuses on 4 parts: the general condition on family, health condition on household members, utilization of health service and medical care system-main collects the information of health condition, education, occupation, family income, participation status and medical care spending of urban-rural residents. However, lacking the data of peasants' personal experience and propensity, the questionnaire has only obtained the data of peasants' general trait.
- Investigation data aiming at NRCMS initiated by public administration institution of Dongbei University of Finance and Economy which not only includes individual trait of peasants but also is supplemented with peasants' personal experience and propensity. For example, whether the peasant has the experience of reimbursement? Or which kind of reimbursement did they have? What's their

hospitalization when they are choosing between outpatient services and inpatient services? Totally 240 questionnaires are distributed and 203 of them are available.

Based on the investigation experience, this text divides the determinants of satisfaction evaluation for NRCMS into two parts:

- Determinant of peasants' individual trait, for example, gender, occupation, income level, education background and health condition etc. As individual trait will have an effect on the uses of medical services which will influence the consumers' feeling toward NRCMS. Furthermore, consumers' satisfaction evaluation will vary based on their self-understanding.
- Personal experience and propensity, mainly includes the experience of reimbursement and hospitalization propensity between outpatient services and inpatient services. Compared with peasants who have no experience of reimbursement, those who have benefited from reimbursement will have higher satisfaction; Resources of sanitary service in medical institutions vary according to the level of the institution its self which might lead to different feelings and satisfaction rate for peasants accepting medical services in different levels of medical institution.

Therefore, the general econometric model of this text is specified as $Y = \alpha + \beta X + \mu$, of which Y is explained as a variable representing subjective satisfaction evaluation of NRCMS. The specific settings for questionnaire data of Liaoning province in 2008 are: 1 is explained as "very satisfied", 2 is explained as "somewhat satisfied", 3 is explained as "satisfied", 4 is explained as "somewhat dissatisfied", 5 is explained as "very dissatisfied", while the specific settings for questionnaire data of Dalian in 2012 are: 1 for "very satisfied", 2 for "satisfied", 3 for "about average", 4 for "dissatisfied", 5 for "very dissatisfied". X is an explanatory variable mainly including different factors of peasants' individual trait, personal experience and subjective propensity etc. Because the dependent variable is an ordered variable, we use ordered Probit model for appraisal.

The specific settings for ordered Probit model of satisfaction evaluation: assume there is a latent variable y_i^* which is non-observable and there are 5 values for 1, 2, 3, 4, 5, respectively.

$$y_i^* = X_i' \beta + u_i^*, (i = 1, 2, 3, 4, 5) \quad (1)$$

Of the Eq. (1), u_i^* is an independent distributed random variable, y_i has the following equation through y_i^* :

$$y_i = \begin{cases} 1 \text{ (Very satisfied)} & \text{if } y_i^* \leq \gamma_1 \\ 2 \text{ (Somewhat satisfied)} & \text{if } \gamma_1 \leq y_i^* \leq \gamma_2 \\ 3 \text{ (Satisfied)} & \text{if } \gamma_2 \leq y_i^* \leq \gamma_3 \\ 4 \text{ (Somewhat dissatisfied)} & \text{if } \gamma_3 \leq y_i^* \leq \gamma_4 \\ 5 \text{ (Dissatisfied)} & \text{if } \gamma_4 \leq y_i^* \end{cases} \quad (2)$$

Of the Eq. (2), γ is a critical value and assume distribution function of u_i^* is $F(x)$ and we have the following probability:

$$\begin{aligned} P(y_i = 1) &= F(\gamma_1 - X_i' \beta) \\ P(y_i = 2) &= F(\gamma_2 - X_i' \beta) - F(\gamma_1 - X_i' \beta) \\ P(y_i = 3) &= F(\gamma_3 - X_i' \beta) - F(\gamma_2 - X_i' \beta) \\ P(y_i = 4) &= F(\gamma_4 - X_i' \beta) - F(\gamma_3 - X_i' \beta) \\ P(y_i = 5) &= 1 - F(\gamma_4 - X_i' \beta) \end{aligned} \quad (3)$$

EMPIRICAL ANALYSIS

The satisfaction evaluation analysis results of Liaoning NRCMS: It is important to note that, when investigate the peasants' satisfaction evaluation factors on NRCMS, the initial model including the influence of many factors, but considering it's more important to select a direct effect on satisfaction evaluation factor, this study only lists the variables which is significantly influenced, in order to policy analysis and comparison. Using ordered Probit model to estimate, as shown in Table 1 and 2, respectively in 2008 Liaoning province and 2012 Dalian City NRCMS satisfaction evaluation analysis results.

From the survey data analysis result of Liaoning province in 2008 we know that the factors in raising the peasants' degree of satisfaction evaluation are: cultural level, whether the low-income residents, whether knowing HIV, the per capita income level, housing construction area, whether drinking alcohol. The factors in reducing the peasants' satisfaction evaluation are mainly included: health condition, medical spending, distance from the medical center, if there is a chronic disease and gender factors, etc. It's worth noting that age influences on satisfaction appear inverted u-shaped relationship, the farmers less than 28, the degree of satisfaction reduced, the farmers more than 28, the satisfaction improved.

The influence of the relationship between variables is mainly included: The higher the cultural level, the higher satisfaction. The low-income residents' satisfactions are higher. Farmers who know AIDS have large probability to satisfy with NRCMS. The higher the per capita income level, the more satisfied the NRCMS. It's better to improve the satisfaction of "the system" if the family building area is large. Thus it can be seen that most of these representative characteristics

Table 1: The analysis of 2008 Liaoning province NRCMS satisfaction evaluation

Variable	Coefficient	p-value
Health level	0.0541	0.0152
Medical costs	0.0249	0.0109
Age	0.0112	0.0425
Age square	-0.0002	0.0108
Low-income families	-0.4242	0.0000
Distance from medical center	0.0564	0.0229
Cultural level	-0.0724	0.0063
Chronic disease	0.1196	0.0442
HIV	-0.0863	0.1191
Per capita income	-0.0428	0.0581
Building area	-0.0018	0.0005
Drinking	-0.0471	0.1043
Gender	0.0697	0.0629

Table 2: The analysis of 2012 Dalian city NRCMS satisfaction evaluation analysis

Variable	Coefficient	p-value
Whether to ease the burden	-0.7682	0.0001
Health level	0.5068	0.0000
Chronic disease	-0.5073	0.0248
Income	-0.1439	0.0583
Not hospitalized	-0.6225	0.0131
High cost of getting medical treatment	0.5295	0.0010
Reimbursement experience: No reimbursement for reference		
Outpatient reimbursement	-0.0993	0.6529
Hospitalization reimbursement	-0.0653	0.7830
Outpatient and hospitalization	-1.3880	0.0001
Reimbursement		
Hospital flow direction: Village clinics as reference		
Village hospital	0.7058	0.1756
Town hospital	1.1734	0.0200
City hospitals and above	0.8468	0.1014

of individual or family variables are can be summarized as two aspects of cognitive ability and economic ability to farmers' personal information, such as the higher the cultural level of farmers, the higher the income is; The stronger the family construction area, the greater the economic ability; And know AIDS shows that personal information cognitive ability is strong. Why these two aspects of NRCMS satisfaction rate have such important influence? Combining with the investigation and analysis of the actual situation, in 2008, Liaoning province's NRCMS belongs to the early stage, farmers still lack of clear understanding of NRCMS, which is caused by NRCMS system and the lack of benign interaction mechanism between farmers, farmers are mistrust of the NRCMS. On the one hand, farmers obtain the importance of information cognition, highlights the necessity of information communication. On the other hand also shows the farmers who have strong capability of information cognition, always have high policy satisfaction. Therefore, it is important to improve information cognitive ability. As for the economic strength of important effect is mainly due to the NRCMS actual compensation standard is still low and the existence of the threshold fee and large medical expenditure still can cause farmers' heavy economic burden, so that people with lower incomes easily become "the illness-caused poverty" and "poverty-

caused illness”, which cause more and more farmers dissatisfied with NRCMS.

In addition, it is also worth attention on the influence of other factors on the degree of satisfaction evaluation. Such as the poorer health level, the easier it is dissatisfied with NRCMS. The probability to dissatisfy the NRCMS is greater when the health spending is high. The dissatisfaction degree of “the system” becomes greater if the distance from the medical center is far. Patients with chronic diseases are more likely to dissatisfy with NRCMS. Men are more likely than women to dissatisfy with NRCMS. These factors may be due to poor medical burden and medical service accessibility two major aspects. Poor health and chronic diseases patients have heavier medical burden, they are easily have dissatisfaction feeling. Far from medical institution, which resulting in poor health services accessibility will also increase the farmers’ dissatisfaction degree. The above analysis shows that whether supply effective medical service will have important influence on the evaluation of NRCMS. Therefore, from the perspective of the medical service supply to formulate corresponding policies, such as controlling the excessively rapid growth of medical expenses, improve the compensation standard in order to reduce farmers’ actual medical burden and improve the medical service accessibility measure become the key to improve farmers’ satisfaction.

Dalian city NRCMS satisfaction evaluation analysis

results: Table 2 is Dalian city NRCMS satisfaction evaluation analysis results. From Table 2 we can know the farmers of NRCMS satisfaction factors mainly include: whether to ease the burden, whether suffering from chronic diseases, income level, hospital hospitalization situation, outpatient and hospitalization expenses are experiencing characteristics and other factors. Reduce the farmers NRCMS satisfaction factors are mainly include: health level, expensive tendency, as well as the country hospital tendency.

The influences of the relationship between variables are: reduce medical burden can make farmers more satisfy with NRCMS, It is worth noting that the chronic disease of NRCMS satisfaction is higher, which form a sharp contrast to 2008, the NRCMS reform plays a positive role in reducing chronic disease burden. With the continuous improvement of Dalian city outpatient compensation standard, especially for patients with chronic diseases of compensation standard made by special arrangement, to a certain extent reduce the actual medical burden of the peasants, at the same time patients with chronic diseases often have medical behavior, they are easier to feel the NRCMS policy and promote chronic illness patient satisfaction improve significantly.

Income variable is still the important factors to influence the degree of satisfaction, the higher the

income, the higher for the NRCMS satisfaction. This shows economic capacity for farmers medical service accessibility is still an important barrier.

Relative to peasants without any reimbursement experience, the outpatient and hospitalization expenses of farmers have higher satisfaction with the NRCMS. It shows that if the farmers can get benefit earnestly, it will improve the NRCMS satisfaction. This not only shows the effectiveness of the existing NRCMS policy, but also shows that increasing the farmers' degree of benefit should be the focus of the future NRCMS policy formulation and implementation.

The only thing can't understand is that the farmers should in hospital but not in hospital have higher dissatisfaction with NRCMS. For the explanation of specific reasons, need to check in the following analysis.

To sum up, all the above characteristics can be analysis by different degree, namely if the benefit of the farmers’ benefit is greater, then on NRCMS satisfaction is higher. This fully shows that farmers’ practical and rational behavior, they will be analysis according to their own actual situation analysis and past experience, if you think the NRCMS policy is real to ease the burden and benefit themselves, they will be give satisfactory evaluation by NRCMS. Therefore, the government should increase policy propaganda, improve farmers health insurance consciousness, prevent people’s confidence reduced for NRCMS policy because of long time did not benefit, in order to prevent the surrender.

In addition, the influence of other factors on the degree of satisfaction evaluation is also worth attention. Health level of poor farmers is easier dissatisfied with NRCMS, this is the same as survey data analysis results in Liaoning province in 2008. Farmers’ who think medical treatment is expensive are more dissatisfy with NRCMS. On the other hand the farmers’ tend to country hospital compare with farmers tend to clinic, the former is easy to show dissatisfy with NRCMS, the main reason may be at the county level and above the county level hospital’s actual compensation standard is still low, leading to farmers' out-of-pocket costs more, the heavy actual medical burden has affected the farmers' positive evaluation to the NRCMS. Therefore, control medical service in a reasonable price, reduce the farmers pay cost; improve the service ability of county-level hospitals and reasonable guide peasants to go to a doctor to grassroots medical institutions is the key to improve farmers’ satisfaction factors.

From Liaoning province and Dalian city’s 2012 survey data analysis we can know, income variables impact on satisfaction evaluation and all are positive correlation, the higher the farmers' income, the greater the probability of satisfied with the NRCMS. This suggests that new rural cooperative medical system” system has obvious regressive effect, causes unfair to

low-income groups; the main reason is the economic ability is still an important threshold of medical services. The evaluation of patients with chronic diseases of NRCMS is a positive change, by the beginning of “not satisfied” transit to the “satisfied”, it shows that the improvement of the NRCMS policy, especially the effective implementation of the villages and towns outpatient service, has reduce the economic burden of patients with chronic diseases, promote the improvement of the chronic diseases patients satisfaction. Health factors impact is relatively consistent, poor health people are more likely dissatisfy to NRCMS; perhaps the main cause is the medical expense and big expectations of reimbursement NRCMS and less actual compensation.

Age factors become less significant, the correlation in by 2008’s inverted U type turn into no relationship, This shows that in 2012, each age group’s farmers in Dalian City keep no difference attitude to the evaluation of NRCMS, farmers’ satisfaction evaluation to the NRCMS tend to be more consistent.

The limit of the data acquisition leads to the above two regression models different variables, which cause for some variables can’t examine the effect of time difference changes. But as the examined factors are the important variables to affect satisfaction, so we still provide the reference to analyze the degree of satisfaction. Such as the investigation and analysis of Liaoning province in 2008, the medical service accessibility shows negatively correlated with NRCMS assessment, which means that the farther the distance of the medical institutions, the poor assessment of NRCMS. The main reason is that “the system” only aims at hospital reimbursement policy, but not to those village clinics, which cause most of the farmers feel they get less benefit from “the system” and the long distance from the medical institution is also affect the utilization efficiency of the medical services, therefore the probability of the dissatisfaction assessment with “the system” is larger. It also suggests that to improve the medical service supplier accessibility is an important factor to improve satisfaction. The same problem also occurs in the field trip in Dalian, the farmers who live near the town clinic have higher satisfaction with “the system”. The main reason is that the village clinic is still unable to apply for reimbursement for farmers to see the doctor, however the reimbursement probability of town clinic reached 40%, causing farmers in nearby towns can be directly to see the doctor and easy to get benefit. But farmers who live far from towns are faced with different situations. Farmers tend to choose the clinic nearby their living place for general common diseases, although no outpatient reimbursement is favorable, considering the convenience as well as the return fare and time cost, they also do not want to delay their farm work to go to the town hospital. That shows farmers will according to their own situation to evaluate NRCMS. Therefore

village clinics should join outpatient service range as soon as possible to improve the accessibility of the farmers' medical services, increase the degree of farmer's benefit directly. But also need to strengthen the system construction, namely, strengthen the supervision and management of village clinics, on the one hand to avoid the rural doctors chaos to raise prices caused by lack of management, on the other hand, avoid the phenomenon of middle outpatient service as a whole fund, offset the serious problem of preferential policy and farmers can not benefit from outpatient service.

From the analysis of survey data in Dalian in 2012, the “expensive” factors will significantly impact on “the system”, which is to think those expensive to see the doctor farmers have large probability to dissatisfy with “the system”. However, “difficult to receive medical treatment” have no remarkable effect on “the system”, which once again shows farmers are more focus on “expensive” problem, but pay little attention to the “difficult” problem. Therefore, “the system” should regard the “expensive” problem as the first solve problem.

In addition, the relationship of other factors also needs to pay attention. Such as reimbursement experience and subjective tendency are also have significantly affection on the dissatisfaction of “the system”. For those farmers whose outpatient and hospitalization are reimbursement have more satisfy with “the system”. But farmers are still not very satisfied with the country-level hospital and above country-level hospital, the main reason is that those hospitals' cost is too high and the actual compensation is less. Therefore, we should actively guide farmers to grassroots hospital, gradually increase the ability of town and county hospital medical service and strictly control the medical expense rise and strive for continuous effectively to improve farmers' satisfaction.

THE CONCLUSION AND POLICY IMPLICATIONS

Through the analysis of NRCMS satisfaction influence factors, we can find the following important conclusions:

- The level of income and health has positive effects on NRCMS satisfaction and the impact nearly no difference. Patients with chronic diseases changed from large probability dissatisfy to satisfaction. Age factor becomes less significant.
- Medical service accessibility is the key factors to influence the NRCMS satisfaction.
- The high cost of getting medical treatment problem the emphasis problem to solve, effectively solve the problem of "expensive" problem is the key to improve farmers' satisfaction.

- Reimbursement experience on NRCMS satisfaction has an obviously direct effect. Those farmers who do not get benefit from “the system” keep less satisfaction.
- Hospitalization tendency affect the “the system” satisfaction. County level and above the county level hospitals’ satisfaction degree are obviously lower.

From the above study can be found, we can improve the farmers’ satisfaction in the following aspects:

- Reconstruct medical service system, rational allocation health resources; improve the accessibility of medical service. Strengthen the village clinics, towns and county-level hospitals’ service ability; government’s fiscal investment presents rural tendency; Increase the manpower and material resources, financial and policy support.
- Complete the NRCMS. Constantly improve the NRCMS compensation standard, expand the scope of compensation and improve the compensation model; Village clinic should be brought into the scope as a whole, improve farmers' convenience to see the doctor, lightens the burden on farmers. For serious illness and disease, we should actively explore the combination of medical insurance and medical relief protection mode, effectively solve the problem of farmers’ “high cost of getting medical treatment” problem and prevent “illness-caused poverty” and “poverty-caused illness” phenomenon.
- Complete the supervision mechanism, control the medical expense rise too quickly and improve the quality of medical services. Straighten out the county hospital management system, innovation incentive mechanism, reduce the suppliers’ induced demand; strengthening supervision mechanism and gradually introducing the social supervision mechanism, strictly supervise the medical service quality and medical service fees,

timely found violations and take strict punishment measures.

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