

Equity in the Utilisation of Medical Services:

*A Survey in Poor
Rural China*

**Yu Hao, Cao Suhua
and Henry Lucas**

IDS Bulletin Vol 28 No 1 1997

1 Introduction

Before 1978, most rural households had low incomes, with a relatively equal distribution at local level. After the economic reforms, household incomes grew rapidly, particularly in the southeastern coastal areas, and the variance in standards of living both between and within regions increased considerably (Ahmad and Wang 1991). According to the State Council, in 1993 there were 80 million rural residents living in absolute poverty (defined in Chinese as *jue-dui-pin-kun*), some 8.7 per cent of the total rural population (Chen 1994).

A number of recent studies have documented a deterioration in service provision in poor areas as economic reforms have removed the communal funding on which health facilities depended (Gu *et al.* 1995; Tang *et al.* 1994). However, there has been little direct empirical evidence of the effect on access by poor households. This article examines the utilisation of curative medical care services in poor rural China, focusing on the health-seeking behaviour of those living below the poverty line.

2 Methodology

We address the question of equity in the use of medical services through analysis of data from the household interview health survey described in the previous paper. The following key indicators were derived from that data:

Household net income per capita was used as an indicator of 1993 household incomes. Consistent with official Chinese statistics, the indicator was calculated using the formula:

$$\begin{aligned} \text{Net income per capita} = & (\text{income from household production} \\ & + \text{wages and receipts from non-household enterprises} \\ & + \text{transfer income} + \text{property income} \\ & - \text{input costs for household production} \\ & - \text{tax to the state} - \text{levies to the local collectives}) / \\ & \text{household size} \end{aligned}$$

This is the standard method for evaluating household income in rural China. As farmers usually earn little cash income, the calculation is based on the production and consumption of crops, fruits, and livestock by the household, valued at the prices prevailing in local markets. This approach has the disadvantage of reliance on the possibly inaccurate

reports of farmers. However, it is still regarded as a useful method, allowing researchers to compare their findings with official figures (Khan *et al.* 1992).

Each study household was allocated to an income category based on the household net income per capita. In 1985, the State Council defined rural inhabitants with per capita net income below ¥150¹ as extremely poor (State Council, 1989). Using the overall consumer price index for rural residents (State Statistical Bureau 1994), this extreme poverty line was adjusted to ¥302 in 1993. Households with per capita net income less than this figure are specified as the low income group. The State Council Leading Group of the Anti-Poverty Programme have assessed the net income per capita of rural residents in poor counties as ¥488 in 1993 (Chen 1994). Sample households with a net income per capita greater than 150 per cent of this figure, i.e. ¥732, are here treated as the high income group. The middle income group thus contains households with per capita net incomes greater than ¥302 and less than ¥732.

Using these definitions there are 912, 1,102, and 708 households in the low, middle, and high income groups respectively, accounting for 34 per cent, 40 per cent and 26 per cent of the sample households. The average household income per capita in each group is ¥174, ¥499 and ¥1,299. Some evidence as to the validity of the income classification was provided by examining the ownership of durable consumer goods by households in each income group, and, in the case of Xunyi county, by applying the above procedure to a group which had been designated by local officials as living in poverty.

Self-reported illness in the previous two weeks: people who reported at least one episode of illness during the two weeks prior to the survey. This indicator was used to reflect the perceived need for health care (for a discussion of the limitations of this indicator see Tang *et al.* 1994).

The severity of self-reported illness was based on two indicators: **having to remain in bed due to illness** and **having to stay away from work or school due to illness** during the previous two weeks.

Number of visits to a health worker per 100 people was used to indicate the level of utilisation of curative outpatient care in the two weeks prior to the survey. The measure included visits to private health practitioners, village health workers, and doctors in hospitals and township health centres.

Referral rate per 1,000 people: the number of admissions plus the number of referrals not resulting in admission per 1,000 people in 1993 was used as an indicator of the 'need' for hospital care.

Number of admissions per 1,000 people was used to indicate the utilisation of hospital care in 1993.

Non-admission rate was defined as the percentage of referrals not resulting in admission to the total referrals.

Self-reported expenditure per visit was adopted to indicate the total cost of visiting a health worker in the proceeding two weeks, and **self-reported expenditure per admission** to indicate the average expenditure on an admission to hospital in 1993. These indicators do not relate simply to fees paid, but include expenditure on travel and accommodation in an attempt to take account of the overall financial burden caused by illness (Gong and Han 1989; Gu and Yu 1995).

3 Results and Discussion

3.1 Reported illness during the two weeks prior to the survey

The percentage of people reporting illness during the two weeks prior to the survey in the three study counties was found to be 12.6 per cent, a very similar figure to that for all rural China in 1993 of 12.8 per cent (MoPH 1994), but somewhat higher than the reported figure from a 1988 survey in poor counties of 9.4 per cent (Tang *et al.* 1994). The proportion of sampled individuals reporting that they had to remain in bed due to illness in the previous two weeks, one indicator of severity, was 5.6 per cent, twice that for rural China as reported by the MoPH (1994).

Although there were no significant differences in the rates of reported severe illness between different groups, those in the low income group reported slightly lower rates of illness overall. Henderson *et*

¹ In 1993, one Yuan (¥) was approximately equal to 0.17 US\$.

Table 1 Self-reported illness during the two weeks prior to the survey (%)

	Low	Middle	High	All	Rural China*
People reporting illness ^a	11.5	13.2	13.3	12.6	12.8
People having to remain in bed due to illness ^b	5.7	5.8	5.2	5.6	2.6
People staying away from work/school due to illness ^c	7.6	7.8	7.8	7.7	7.6

^a $\chi^2 = 7.95$, $DF=2$, $0.01 < P < 0.05$; ^b $\chi^2 = 1.44$, $DF=2$, $P > 0.05$; ^c $\chi^2 = 0.18$, $DF=2$, $P > 0.05$

*Source: Ministry of Public Health: An analysis report of the National Health Services Survey in 1993. Published by the Ministry of Public Health.

al. (1994) indicated that a survey in eight provinces of China also found lower levels of reported illness for the poorest third of households as compared to the richest third (9.1 per cent vs. 11.5 per cent). Mbugua *et al.* (1995), reporting similar findings from a case study of Kibwezi in rural Kenya, argued that this did not mean that poor households were healthier than richer households, but rather that the groups differed in their interpretation of symptoms, with the poor having a higher level of tolerance.

3.2 Utilisation of curative outpatient services

Table 2 presents the number of visits to a health worker by health facility and income group. Contrary to expectations, household income did not appear to be a major factor predicting different utilisation of services, though there were small differences in the use of outpatient services between the low and high income groups. Similar findings are presented in the study by Henderson *et al.* (1994). Possible explanations include the relative affordability of outpatient care, discussed below, and the widespread availability of services. In each of the study villages, there was at least one health worker, either at a village health station or operating as a private health practitioner. Overall, the average distance from villagers' houses to the nearest health facility² was 27 minutes on foot, with marginal differences by income group.

² In most cases, the nearest health facility means village health station or private health practitioners at village level.

In terms of attendance at health facilities at different levels, there would again appear to be some limited, though statistically significant, variation between different income groups. The largest proportion of visits took place at village health stations, which are located within villages and easy for villagers to attend. Attendance at private health practitioners by those from the low and middle income groups was somewhat higher than that at township health centres. This would seem to indicate a weakening of the three-tier network of rural health facilities, particularly at township level. This result is consistent with that of a preliminary study carried out in the three selected counties (Gao *et al.* 1995; Shen 1995). This found that, since the 1980s, the quality and volume of services offered at township level has decreased, paralleled by higher user charges for township services in comparison to village health care. As a result, villagers are more likely to use village and private health care, unless the illness is severe, in which case medical care will often be sought at the county hospital.

Some 39 per cent of the sample population in the three study counties reported illness but did not visit a doctor, slightly higher than the average level of 34 per cent for rural China in 1993 (MoPH, 1994). The difference between the three income groups was statistically significant. The fact that the higher the household income the lower percentage of people not seeking medical care when needed would seem to demonstrate that household income is a positive factor in the utilisation of outpatient services.

Overall, the proportion of people who gave 'financial difficulty' as the reason for not visiting a health

*Table 2 Number of visits to a health worker per 100 people by health facility**

	Low	Middle	High
VHS	6.6	6.2	6.4
Private practitioner	3.9	4.3	4.3
THC	3.3	2.7	4.8
CH and others	2.7	2.4	3.2
All	16.5	15.6	18.7

* $\chi^2=18.62$, DF=6, $P<0.01$

Note: VHS: village health station. Private health practitioners are located mostly at village and township level. THC: township health centre. CH: county hospital.

Table 3 Non-use of outpatient care by reasons

	Low	Middle	High	Total
People reporting illness but not seeking medical care (%) ^a	42	39	34	39
People not visiting a health worker by reason (%) ^b				
Financial difficulty	55	38	24	41
No time	15	22	25	21
Difficulty in travelling	6	8	15	9
Self-care	18	18	26	19
Other	7	14	10	11

^a $\chi^2 = 6.51$, DF=2, $0.01 < P < 0.05$; ^b $\chi^2 = 43.39$, DF=2, $P < 0.001$

worker was 41 per cent, double the proportion of 20 per cent for all rural China (MoPH 1994). There was also a significant difference between income groups. 'Financial difficulty' was the most common reason given by people of low income group, while a higher proportion of people in the high income group attributed non-use of outpatient care to having 'no time'.

This evidence suggests that the user charges for outpatient services are acting as a deterrent, especially for those who are extremely poor. The proportion of individuals in the high income group giving 'no time' as a reason for not visiting a health worker may indicate that richer households place more emphasis on production. Xia's study in the rural suburbs of Shanghai, where household income

level is higher than the average level for rural China, also found that the largest proportion of farmers who reported illness but did not visit a doctor were those who claimed to be too busy on household business to seek health care (Xia 1993).

3.3 Utilisation of inpatient services

The referral rate for inpatient services was 85 per 1,000 for the low income group, much the same as that for the high income group, indicating a similar level of need for inpatient care. However, the number of admissions per 1,000 varied from 53 for the low income group to 72 for the high income group. Correspondingly, there was a considerable difference in the number of referrals not resulting in admission. The use of inpatient services was posi-

Table 4 Utilisation of inpatient services during the two weeks prior to the survey

	Low	Middle	High	Total
Referral rate per 1,000 people*	85	78	87	80
Admissions per 1,000 people	53	55	72	58
Referrals not resulting in admission, per 1,000 people	32	23	15	22
Non-admission rate ^a	38	29	18	29

^a $\chi^2 = 29.77$, $DF=2$, $P < 0.001$

Notes: Referral rate = number of admissions plus referrals not resulting in admission per 1,000 people
 Non-admission rate = referrals not resulting in admission as a percentage of total referrals

Table 5 Percent distribution by reason for non-admission into hospital

	Low	Middle	High	Total
No money	94	74	50	79
No time	6	6	17	6
No bed available	0	1	0	0.5
Other	0	19	13	15

tively correlated with household income level, as expected, and there was a statistically significant difference in non-admission rates between different income groups.

In terms of problems deterring villagers from hospital utilisation, 'no money' was the major cause given by people who were not admitted into hospital in spite of referral by a doctor. Some 94 per cent of individuals from low income households who did not seek inpatient care gave financial constraints as the reason, while the corresponding figure for high income households was 50 per cent, reinforcing the finding that household income has a major impact on the use of inpatient care.

It is useful to note that there were very few people who gave 'no hospital bed available' as a reason for not being admitted into hospital. This would indicate that the non-use of inpatient services in poor rural areas was not caused by an insufficiency of health provision. In fact, the occupancy rate of hospital beds at township level was very low. The occupancy rate at township health centres in 1993 was 41 per cent, 18 per

cent and 45 per cent in Donglan, Shibing, and Xunyi respectively (Gu *et al.* 1995).

3.4 Self-reported expenditure on medical care

Table 6 shows the self-reported expenditure per visit to outpatient facilities during the preceding two weeks by health facility and income group. The average expenditure per visit reported by the study population is ¥24, more than the average level for rural China in 1993 (¥14) (MoPH 1994). For people in the low income group, the self-reported expenditure per visit is ¥26, very similar to that for those of high income group (¥28). At the same level of health facility, there are relatively small differences in self-reported expenditure per visit between different income groups.

Not surprisingly, the higher the level of health facility the higher is the expenditure per visit. Overall, the lowest expenditure was recorded at village health stations and the highest at county hospital and other health facilities. Tang *et al.* (1994) have reported that health stations have been relatively successful in controlling costs.

Table 6 Self-reported expenditure per visit in two weeks prior to survey by facility (¥)

	Low	Middle	High
VHS	11	11	11
Private practitioner	18	15	12
THC	27	19	27
CH	72	57	93
Other	82	29	30
Average	26	19	28

Note: In 1994, one Yuan (¥) was approximately equal to 0.12 US\$.

Table 7 Self-reported expenditure per admission in 1993 by health facility (¥)

	Low	Middle	High
THC	219	155	274
CH	428	636	575
Higher Level	893	930	948
Average	413	440	509

Note: In 1993, one Yuan (¥) @ 0.17 US\$.

The self-reported expenditure per admission to inpatient care in 1993 are presented in Table 7. The average expenditure per admission reported by the sample population is ¥452, far lower than the average level of ¥828 for rural China in 1993 (MoPH 1994).

Consistent with expectations, the cost of hospitalisation services is related to household net income. Average self-reported expenditure per admission increases as the household net income rises. Moreover, at the same level of health facility, the average expenditure per admission reported by people from the high income group is more than that by those from the low income group. Again as predicted, the higher level a health facility, the more the inpatient care cost. Overall, the average expenditure per admission is ¥210 at township level, less than one quarter of that at prefecture and above.

It should be kept in mind that self-reported expenditure per admission was not intended to measure sim-

ply the fees paid for inpatient care, but to reflect the full financial burden of admission, travelling an accommodation born by the patient's household.

Table 8 focuses on households with at least one family member admitted in hospital in 1993. As can be seen, the expenditure per admission accounts for a very high proportion of their net income. Overall, they spent an average of 74 per cent of net income per capita, or 15 per cent of net income per household on each admission. As would be expected, the richer the households were, the smaller was the expenditure per admission as a proportion of income. For households from the low income group expenditure per admission cost 318 per cent of their net income per capita and 59 per cent of their net income per household.

It was indicated above that 94 per cent of people from low income group gave 'no money' as the reason for not being admitted into hospital on referral.

Table 8 Expenditure per admission as percentage of household net income, 1993*

	Percentage of net income per capita	Percentage of net income per household
Low	318	59
Middle	88	18
High	41	8
Average	74	15

* For households with at least one member admitted to hospital in 1993.

The very high ratio of expenditure per admission to household net income would seem to indicate that inpatient care is extremely expensive for poor households, and that their economic situation would be considerably worsened by the hospitalisation of a household member. This finding is reinforced by the fact that 47 per cent of households in the low income group with at least one member admitted to hospital had to borrow money to pay their medical bills. For the middle and high income groups, the corresponding figures are 31 per cent and 25 per cent. A study by Zhang in Yuhuan county, Zhejiang province, similarly reports that 47 per cent of poverty-stricken families gave payment for expensive medical care for family members as the most important contributory factor in forcing them into poverty (Zhang 1991).

4 Conclusion

In this survey in poor rural China, limited evidence was found of differential use of outpatient services, but much greater variation in the use of inpatient care by different income groups. The results are consistent with the findings of other studies. For example, a recent study in Thailand found that, as a consequence of the increasingly unequal distribution of income, health care was considered a necessity by rich households, but a luxury good for poor households (Samtisant 1994). Mbugua *et al.* (*op. cit.*) report that in Kibwezi the poorest households made much less use of government facilities than better-off households after user fees were introduced. Gertler and van der Gaag's study in rural Côte d'Ivoire and rural Peru (1990) found that medical demand was very price-elastic for individuals in the lowest income group but relatively inelastic for those in the highest income group. Hence, they argued that user fees can generate substantial revenue without much effect on utilisation

by individuals in the upper income group, but may cause large reductions in utilisation by those in the lower income group. In China, a nationwide survey in 1988 reported that while the utilisation of outpatient services was similar, utilisation of more expensive hospital facilities declined from the more to the less prosperous regions (Gu *et al.* 1993). It would appear that the relatively equal access to health care that existed before the reforms has eroded as inequality in household incomes has increased. In particular, there has been a considerable impact on access to inpatient care for those who live below the poverty line.

This contrasts somewhat with the findings of a recent study (Henderson *et al.* 1994), which found relatively good access to health services by a study population in eight provinces in China. However, since their findings were based on a sub-sample of adults, aged 20-45, and the illnesses reported in their survey were mostly mild or moderate, they acknowledge that a different result might be found if severe, costly health problems were analysed. In our study, the findings may result mainly from two factors. First, the households were selected purposively in western China, where the rural economies are less developed and the vast majority of the rural population live in relative poverty. Second, the illnesses reported by the sample population were more severe than the average for rural China.

There does seem to be evidence that the problems of poverty and serious illness have become a vicious circle for the poor, as pointed out by the Minister of Public Health (Chen 1993). On the one hand, they are not able to pay for the medical care they need. On the other, their income from household production may be greatly reduced and their outgoings greatly increased if severe illness strikes.

Consistent with our predictions, the main factor influencing the non-use of services was not the unavailability of medical facilities at local level, but the inability of villagers to pay for care. Many farmers interviewed in our survey regretted the collapse of the cooperative medical schemes in the early 1980s, and expressed their strong desire for a new scheme to guarantee access to health services. As a part of the study, proposals to improve the current situation have been made by the researchers to government officials at county and township levels in

the study counties. All have expressed an interest in developing strategies for improving the utilisation of health services, and both Donglan and Xunyi county health authorities have agreed to begin an experimental study in some townships, aiming to establish a new co-operative medical scheme and ensure access to basic health care for all rural households, including the poorest. The next phase of our study will focus on the monitoring and evaluation of the experimental schemes in these two counties.

References

- Ahmad, E. and Wang, Y., 1991, 'Inequality and poverty in China: institutional change and public policy, 1978 to 1988', **The World Bank Economic Review**, Vol 5 No 2: 231-257
- Chen, J.S., 1994, 'Fighting against the absolute poverty', **Xinhua Monthly** (*Xinhua Yuebao*), October 1994: 56
- Chen, M.Z., 1993, 'A report presented in the Conference on Rural Health Development' **Chinese Primary Health Care** (*zhong guo chu ji wei sheng bao jian*), Vol 7 No 9: 3-7
- Gertler, P. and van der Gaag, J., 1990, **The willingness to pay for medical care, evidence from two developing countries**, a World Bank Publication, Baltimore, The Johns Hopkins University Press
- Gao J.M. *et al.*, 1995, 'Financing rural health services, Xunyi county, Shaanxi Province', in Gu, X.Y. *et al.*, (eds), 'Health expenditure and finance in three poor counties of China', **Working Paper 21**, Brighton: IDS
- Gong, Y.L. and Han, F.X., 1989, **Health Services Study**, Changchun: Jilin People's Publishing House
- Gu, X.Y. *et al.*, 1993, 'Financing health care in rural China: preliminary report of a national study', **Social Science and Medicine**, Vol 36, No 4: 385-391
- Gu, X.Y. *et al.*, (eds), 1995, 'Health expenditure and finance in three poor counties of China', **Working Paper 21**, Brighton: IDS
- Gu, X.Y. and Yu, H., 1995: 'Farmer's expenditure on basic medical care: a study in poor rural area. Chinese Primary Health Care', (*zhong guo chu ji wei sheng bao jian*), Vol No 8: 21-23
- Henderson, G. *et al.*, 1994, 'Equality and the utilisation of health services: report of an eight-province survey in China', **Social Science and Medicine**, Vol 39 No 5: 687-699
- Khan A.R. *et al.*, 1992, 'Sources of income inequality in post-reform China', paper presented at Annual Meeting of the Asian Studies, Washington DC
- Mbugua, J.K. *et al.*, 1995, 'Impact of user charges on vulnerable groups, the case of Kibwezi in rural Kenya', **Social Science and Medicine**, Vol 41 No 6: 829-835
- Ministry of Public Health 1994, 'An analysis report of the National Health Services Survey in 1993', published by the Ministry of Public Health
- Sarntisart, I., 1994, 'Poverty, income inequality, and health care consumption in Thailand', **The Southeast Asian Journal of Tropical Medicine and Public Health**, Vol 25 No 4: 618-627
- Shen, W.H., 1995, 'A study of income and expenditure of township health centres of Donglan County', **Chinese Primary Health Care** (*zhong guo chu ji wei sheng bao jian*), Vol 9 No: 37-38
- State Council, 1989, **Outlines of Economic Development in China's Poor Areas**, Beijing: Agriculture Publishing House
- State Statistical Bureau 1994, **China Statistics Yearbook, 1994**, Beijing: Statistics Publishing House
- Tang, S.L. *et al.*, 1994, 'Financing health services in China: adapting to economic reform', **IDS Research Report 26**, Brighton: IDS
- Xia, B.H., 1993, 'A study of hospitalisation insurance schemes for farmers in the suburb counties of Shanghai', masters thesis, Shanghai Medical University
- Zhang, C.M., 1991, 'The cooperative medical care system in Yuhuan county', in Gu, X.Y. *et al.*, (eds), **Study of health care financing system in rural China**, Shanghai: Shanghai Science and Technology Press