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The village doctors in different ownership clinics in China's countryside

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Colophon

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Preface

This study examines the relationship between medical practice and type of clinic ownership in HeBei province in the People's Republic of China. The objective was to find out whether the kind of clinic ownership affects health care delivery patterns and access to health care. The study was carried out between 1995 and 2000 by a team of researchers from China, Israel and the Netherlands.

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I. General information

I.1 Framework of the study

When the People's Republic of China (PRC) was established in 1949 after centuries of feudalism, war against Japan and civil war during the Communist revolution, the health condition of the population was extremely poor. Although systematic vital statistics were scarcely collected, it is estimated that life expectancy at birth was about 35 years, infant mortality at about 250 per 1000 live births, and maternal mortality at 150 per 100,000 (Young, 1989; Ministry of Public Health, 1993). Health services were privately owned and relatively scarce. It is estimated that there were 0.67 doctors per 1,000 people and some 3,600 health institutions in the whole of China in 1949 and that 2,600 of these institutions were located in the cities above county level. In other words, they were largely inaccessible to the majority (87.5%) of the Chinese population living in rural areas (Ministry of Public Health, 1984; China Year Book, 1998).

One of the goals the Communist Party was to expand the accessibility of health care and improve its quality. Health institutions were nationalised and transferred from private or foreign to public ownership. Most private practitioners were recruited and integrated as employees into the public system. The number of village clinics and health centres increased dramatically, especially during the Cultural Revolution (1966-1976). The economic reforms from 1979 onwards, however, ended in the privatisation of almost half of the rural clinics within six years. After the economic reforms, the village administrations could no longer support the health personnel. Village doctors had to fund most of their professional training themselves and ensure that their income and living standards would not fall behind those of their neighbours, the farmers. At the same time, the market forces called for private medicine and a wide variety of combinations between clinic ownership and practice type emerged. Three main types can now be distinguished: government-owned clinics, collectively-owned clinics and private enterprises (Box 1), with the latter accounting for about 47.5% of the village clinics in 1990 (Liu *et al.*, 1994).

The relation between a doctor's fee and the health care services provided (diagnostic procedures, treatment and medication) is different for each type of clinic (Cao and Zhong, 1990; Li, 1993; Zhu *et al.*, 1993; Zhou, 1992) (see Section I.2). This study aims to assess whether health care delivery patterns and accessibility of health care are influenced by the type of clinic ownership.

Box 1 Different types of clinic ownership

Private doctors usually work alone and their clinic is located at their home. All equipment and medications in the clinic are privately owned, purchased by the doctor him/herself. Some private practitioners also have a few patients' beds for day observation. These practitioners generate most of their income from performing medical procedures and selling the medications they prescribe.

Collectively-owned clinics are usually staffed by two or more village doctors, who work together as a group practice. The facility is often the village clinic from the pre-economic reforms era and it is normally larger than the typical private practice. Thus, it has a separate room for inpatients, although for day care only. The village doctors in such a clinic either rent the clinic from the village administration, or provide the village with public health services at a discount price. Village doctors in such clinics generate their income individually from the services they provide and the drugs they prescribe, but there is usually some surplus profit at the end of the financial year. Some portion of this sum is invested in equipment and the rest is divided between the practitioners according to their relative contribution to the clinic's total income.

Government-owned clinics are a branch of a government-owned hospital. They are larger than the other clinics and normally have inpatient services. They often have a small laboratory and an operating room for childbirth and minor surgery. They also have a pharmacy and an administrative secretary, who collects the fees from the patients. Doctors in these clinics are salaried employees, yet the profit made by the clinics is divided in much the same way as that generated in a collectively-owned clinic. Some is used for developing the clinic, to buy new or replace old equipment; some of the remainder is used to benefit the staff, a bonus according to each staff member's contribution to the profit accumulated; the rest is transferred to the hospital owning the clinic.

The study was carried out in HeBei province, located in Northern China in the neighbourhood of the capital, Beijing. With 188,000 km^2 and a total population of 65.25 million, HeBei covers 2% of China's area and houses 5.3% of its population. The province is an important national traffic crossroads, with eight central railways and four highways crossing its area. It has many resources for tourism and a lot of special products, such as ducks, pears, chestnuts, peaches, spun-gold Chinese dates and prawns.

The province has undergone social and economic processes similar to those in other parts of China. The economic reforms of 1979 brought about a rapid development of agriculture and rural industries. The main agricultural products are winter wheat, summer maize, soybean, cotton, vegetables and fruit, while livestock production centres on pork, beef, eggs,

chicken and mutton. Marine resources are being exploited as well and include prawns, shellfish, crabs and whitefish. By 1998, there were 1.81 million rural industrial plants in HeBei, producing textiles, food, pharmaceutical products, cables, construction materials and electronics. As a result of a growing per capita income from these sectors, the standard of living of HeBei's population has increased steadily. HeBei reflects not only the economic changes that China is undergoing, but also the current trends in the country's health care system (see Section II.1).

I.2 Objectives and research questions

I.2.1 Rationale behind the research questions

The degree to which a doctor's income is dependent on the patient fees charged for the medical services provided varies with the type of clinic ownership. The income of doctors in government-owned clinics – mostly branches of county level hospitals – is least dependent on the services they provide. These doctors are salaried local government employees and thus have a fixed monthly income, unrelated to the type and the quantity of the medical services they provide.

In collectively-owned clinics, there is a closer relationship between patients' fees for the services provided and a doctor's income. The common arrangement in such clinics is that the health personnel employed receive a regular monthly salary, but share at least part of the annual revenues of the clinic at the end of the year. These revenues are not equally distributed, but are divided between the doctors according to their relative contribution to the clinic's income.

In private clinics, doctors' income from practising medicine is generated by fee-for-service. It is thus directly related to the diagnostic and treatment procedures performed and the medication prescribed and sold to patients.

If ownership type is differentially associated with the practitioners' direct income, it may be hypothesised that the different levels of the immediate relationship between income and the services provided may affect medical practice and its outcomes.

Private, fee-for-service health care is believed to have several advantages over public care provision. Firstly, fee-for-service can increase the availability of higher quality medical care (Liu *et al.*, 1994). Secondly, motivated by profit making, fee-for-service may increase the accessibility of health care, for example, by keeping more flexible work schedules than is usually offered by public facilities. Thirdly, doctors in fee-for-service

systems tend to be more attuned to patients' psychological needs and have better bedside manners than their public counterparts (Bhat, 1993). Finally, high accessibility and a good doctor-patient relationship generally lead to an increase in patient satisfaction (Yuen, 1992).

Nonetheless, fee-for-service medicine is also believed to have some disadvantages as compared to public medicine. First and foremost, a fee-for-service health care system increases inequity and inequality at all levels (Bledsoe *et al.*, 1988; MacCormack, 1988). Secondly, the fee-for-service health care system may motivate care providers to direct their professional activity towards income-generating curative care and to neglect the less profitable preventive medicine and health education (Kan, 1990). Moreover, under no-competition conditions, that is, when there is only one health care provider, or when providers are organised, they can set their own prices and other aspects of professional behaviour.

Some decline in public health has indeed been observed since the expansion of fee-for-service health care which followed the 1979 economic reforms in China. Immunisation coverage has declined to 60% in urban China, where eligibility for health care was less affected by the reforms, and to 33% in the rural areas, where health care underwent massive privatisation (Gautam, 1993). In some parts of China, the decline in the incidence and prevalence of some infectious diseases, such as bilharzia, had slowed down or even reversed (World Bank Country Study, 1992; Dezhi, 1992; Zhu *et al.*, 1989). Moreover, with the ageing of the population, the incidence and prevalence of chronic, degenerative diseases, such as malignancies and vascular diseases, has increased, presenting China with new public health challenges. Although these diseases are mostly incurable, preventive health measures, such as blood pressure control and health education like dietary instructions and anti-smoking campaigns, are extremely important for delaying the onset of such diseases (Gautam, 1993; Tao *et al.*, 1989; Young, 1989). Finally, it has been suggested that the fee-for-service system which developed in rural China has increased the country's health expenditure. According to World Bank estimates, medication costs account for about a half of all health expenditure in China (McGreevey, 1995a; 1995b) and doctors prescribe 2.3 drugs per visit (World Bank Country Study, 1992). As drug sales and medical procedures are the main sources of private doctors' earnings (Gu *et al.*, 1993; Umland *et al.*, 1992), it is possible that private village doctors tend to over-prescribe and over-treat more often than doctors in clinics where income is not directly related to the service provided.

All these arguments have been derived from a theoretical framework grounded on utilitarian economics. They do not take into account the social

context in which the village doctors in the three types of clinic ownership practise. Yet it is the power of the social context in which the medical practice takes place, as well as the characteristics of the practice setting itself which may well modify professional behaviour (Turner, 1997).

I.2.2 Objectives and research questions

Against the background outlined above, this study aimed to explore the extent to which type of clinic ownership and the differential service-income relationships, in particular, are associated with health in the broadest sense of the term: the characteristics of health personnel, patterns of professional practice, accessibility and affordability of health care to patients, and health indicators of the rural population in China. The study focused on the following research questions:

1. Is clinic ownership type related to patterns of medical practice?
2. Are the characteristics of village doctors related to the type of ownership of the clinic in which they practise?
3. Is clinic ownership type related to the affordability of health care?
4. Is clinic ownership type related to the accessibility of health care?
5. Is clinic ownership type related to inequality in the utilisation of health care?
6. Is clinic ownership type related to the health of the population?

I.3 Historical background: the evolution of health care in Communist China

I.3.1 From liberation to the Cultural Revolution (1950-1966)

During the first years of the PRC, the government planned a socialist medical system, designed along four principles (Dezhi, 1992):

1. Provision of publicly owned and financed health care.
2. Priority to public health, that is, the prevention of infectious diseases and special emphasis on mother and child care.
3. The integration of traditional and western medicine in care provision.
4. The implementation of health campaigns, with special emphasis on breaking epidemiological triangles, and health education.

These principles were largely implemented from 1954 to 1963. Health institutions were nationalised and transferred from private or foreign ownership to public ownership. Most private practitioners became employees in the public system.

A three-tier health care system – that is, county, township and village – was planned, and a multi-level medical education system was established in order to increase the supply of health care providers. Medical education

ranged from university training in western medicine to three-month apprenticeships in commune health centres. Trainees included medical doctors, who became the staff of county and above-county level hospitals, and barefoot doctors and rural commune members who were trained to carry out health campaigns, preventive care and simple curative treatment at the commune and brigade level.

Three insurance schemes were developed, covering 80% of the population by the end of the period. Free lifelong health care was provided for government employees and their family members, financed by the state. Employees of state-owned enterprises were entitled to a labour protection scheme, which covered all their own health expenses and half of the expenses of their immediate family members. In the villages, a system of cooperative medical care was established for members of the communes and/or brigades. This system depended heavily on the collective economic system and was based on the voluntary cooperation of the residents of each village. Within a short time, over 90% of the villages (then: production brigades) established medical cooperatives. Financing for the health services came from the commune members, the welfare funds of the brigade and the public welfare funds of the commune. Coverage varied by village. In some villages, registration fees were charged and medication was free; in others registration fees were waived, but not medication and other treatment fees; and, in other villages again, medication and treatment were purchased at a discount price. Hospitalisation charges were covered, fully or partially, according to the patient's and the brigade's financial situations.

It should be noted that, at that time, medical expenditure was relatively low, partly because low-cost traditional Chinese medical interventions and Chinese herbal medicines were widely used. The cooperative system guaranteed basic health, which became accessible and affordable to the formerly under-served rural population.

In accordance with the primacy of public health, several health campaigns were launched. A major campaign was aimed at the eradication of the "five evils", *i.e.* at the control of infectious diseases transmitted by pests. Multiple measures were taken to eradicate bedbugs, flies, mosquitoes, rats and snails. Health education programmes were developed to increase awareness of personal hygiene, nutrition and physical activity. Towards the end of the period, the years of the "Great Leap Forward", resources were invested in improving water supplies and environmental sanitation in rural areas.

I.3.2 The Cultural Revolution (1966-1976)

The period of the Cultural Revolution was characterised by severe social and economic turbulence. Residual private economic enterprises were nationalised and many intellectuals (in particular those with western training or specialisation) and persons with foreign relations were publicly criticised and lost their jobs. This period of turmoil also deeply affected the health sector. The few doctors who still practised privately either stopped practising and joined publicly-owned facilities, or were relocated to remote rural areas. Higher level medical education largely ceased and many hospitals were closed. The number of doctors and health facilities declined by 33%. Many of the health campaigns, which successfully decreased mortality from infectious diseases during the first 15 years of the PRC were discontinued (China Year Book, 1998; Dezhi, 1992; Liu *et al.*, 1994).

The Cultural Revolution affected, however, mainly the urban health care institutions and personnel, while rural health services flourished. The private practices were replaced by public services and the number of village clinics and health centres increased dramatically. A large number of rural clinics were established and programmes for training members of the rural population as medical personnel and midwives were expanded. While the total number of health care personnel decreased by 5% between 1965 and 1970, the number of nurses and midwives increased by 25%. By the end of this period, health services were available, that is, affordable and accessible, to almost all the rural population, though the quality of care provision was uneven.

Health care was affordable. The great majority of the urban and rural population was eligible for one of the three health insurance schemes. Furthermore, hospital registration fees, the price of medication and of treatment procedures were still low. The three-tier grassroots facilities were well established and were well spread-out, though sometimes poorly equipped. In general, village clinics provided services for the population in a radius of 1.5-2.5 kilometres, except for the remote mountain and minority areas, and were thus highly accessible. Moreover, rural health care providers were well motivated to serve the population to the best of their ability. They were members of the commune or working brigade, chosen by the village administration and their training was paid for from the commune funds. They were thus accountable to the commune committee, and their employment conditions were comfortable compared to those of their counterparts working in agriculture (Dezhi, 1992; Kan, 1990).

I.3.3 The economic reforms (1979 and thereafter)

The upheaval of the Cultural Revolution almost ruined China's economy. The major challenge in the first years after the revolution was to revitalise the economy. During the period 1977-1979, a transition from collective production and consumption towards a "socialist market economy" was planned and gradually implemented. The rural economy, embracing 82% of the population at that time and crucial to avoiding further famine, was top priority. Indeed, one of the first measures to be introduced was "the responsibility system of household production" in rural China.

Contrary to the Cultural Revolution's effect on the health sector, the new economic reforms left the urban health care system basically intact, but had profound consequences for the rural health services (Liu *et al.*, 1994; Kan, 1990; Shi, 1993; Young, 1989). "The responsibility system of household production" initiated a number of intertwined processes, which ended in the privatisation of almost half of the rural clinics within six years.

The economic reforms were followed by a steady increase in the farmers' incomes and standard of living. With the increase of income, the demand for higher quality health care, both in terms of providers' qualifications and competence and in terms of the available health facilities, increased too. More importantly, farmers became reluctant to contribute their time and income to village administration and the financial basis of the brigade/commune evaporated (Chen *et al.*,1992; Gian, 1991; Sun, 1992).

Consequently, particularly in the poorer villages, the commune cooperative health insurance system collapsed and the village committee could no longer subsidise the village clinics. The dissolution of the village collective economy and the growing reluctance of the population to contribute resources to the collective drained the financial basis of the medical cooperative insurance. By 1989, health services at reduced fees were available in only 4.8% of villages in the whole of China. In the 1990s, as China prepared to carry out the "health for all in 2000" programme in its rural areas, ways of recovering and improving the cooperative medical system were sought. Since 1997, more than 350 counties have developed a cooperative medical system, although one quite different from the earlier schemes which prevailed before the economic reforms.

The new system relies heavily on individual contributions for its finances and coverage is decided at the local level. According to a survey (Yang, 1998) conducted in 7 provinces, 14 counties and 42 experimental townships in 1996, 84.1% of the cooperative medical funds came from local,

individual, residents. An additional 8.9% came from the village committees, 5.6% from the township authorities and 1.4% from the county government. The average reimbursement for outpatient services in village clinics was 29.4%, while it was 20.8% in township hospitals and only 7.1% for outpatient services in a county hospital. Up to now, however, China has not developed a definitive universal model of rural medical insurance.

After the economic reforms, the village administration could no longer support the health personnel. Village doctors had to fund most of their professional training by themselves and to ensure that their income and standard of living did not fall behind that of their neighbours, the farmers. The market forces called for private medicine, and a wide variety of combinations between clinic ownership and type of practice emerged. This led to the emergence of the three types of clinics mentioned above (government-owned clinics, collectively-owned clinics and private enterprises).

Despite these changes, most of the rural medical personnel continued to provide curative and preventive health services for the rural population. The number of competent care providers increased during the 1980s, as graduates of secondary medical schools and army veterans trained as paramedics returned to their home villages and started a practice. Since January 1985, health practitioners have been required to take an examination set by the Health Department of the province in which they practise. Those who proved knowledge equivalent to a secondary medical school level were certified as "Village Doctors", while those who failed were recognised as "Medical Persons".

Yet the mandatory examinations were not sufficient to assure quality health care and the professional knowledge and competence of many of the rural health care providers were far from satisfactory. Consequently, the 10-year "Education Plan for Rural Practitioners" was launched by the Chinese Health Ministry in 1991. This programme brought about an increase in the number of certified village doctors in the rural health care system and a decline in the proportion of medical persons. In 1997, there were 970,000 rural doctors, an increase of 51.2% from 1985, while the number of medical persons declined by 46.8% during the same period.

The increase in the standard of living and the investment in public health, preventive medicine and health campaigns improved most health indicators of the Chinese population. In 1987, life expectancy at birth reached 71.5 years among the urban population and 67.3 among the rural population (Ministry of Public Health, 1993). Infant mortality dropped to 20.0 per 1,000 live births in the cities and to 46.5 in the rural villages

(Dezhi, 1992). Maternal mortality in 1989 was 50 per 100,000 live births in urban China and 115 in rural China (Lawson and Lin, 1994).

Improved nutrition and preventive and public health played a major role in reducing mortality rates for 23 leading infectious diseases. Mortality caused by infectious diseases fell from 18.7 per 100,000 in 1965, the first year for which reliable data are available, to 4.4 in 1979 and to 1.49 in 1988. Similarly, morbidity rates of these 23 leading infectious diseases declined from 35.0 per 1,000 people in 1965 to 20.8 in 1979 and continued to decline to 4.7 in 1998 (Dezhi, 1992). Nevertheless, infectious diseases continue to be a serious problem in rural China. In 1997, infectious diseases were the 10th leading cause of death in rural areas and accounted for 1.4% of total rural mortality (China Year Book, 1998). In urban China, infectious diseases did not feature among the ten leading causes of death at all.

I.4 Theoretical orientation

The field of Health Sociology has not yet developed a unique, comprehensive, theoretical framework (Shuval, 1992; Turner, 1997). As a result, the work in this field is characterised by an eclectic theoretical approach, with different theoretical emphases over time. The current study is no exception. In accordance with the emphasis on neo-Marxist analysis, conflict theory and political economy which has prevailed in the sociology of health and illness since the 1970s (Turner, 1997), it draws heavily on current sociological critiques of the withdrawal of the welfare state and the increasing privatisation of social services, including medical care. These critiques assume that economic interests, such as cost containment and profit generation, motivate both the health policy of the state and that of care- providing organisations, as well as guide the professional behaviour of health personnel as individuals and professional groups. It has been commonly argued that interest in the accumulation and maintenance of economic and power rewards of the individual practitioners and the health care organisations, increase inequity, inequality and affect patterns of medical practice, thus bringing about differential access to health and health care for different social groups.

Nevertheless, alternative theoretical approaches predominated in the sociology of medicine during its earlier stage of development. During the 1950s and the 1960s, it was widely accepted that one basic characteristic of a service profession is that it is a "calling" in the Weberian sense of the concept (Weber, 1978). Structural functionalists have argued that this "calling" orientation dictates a professional behaviour which puts service before personal interests. This school of thought, however, rarely dealt with

the possible paradoxical interpretation of the primacy of service which stems from the Weberian concern with bureaucracy and bureaucratic organisation. The question of whose interests are to be served – those of the organisation, the professional group or the client – was not raised until the 1970s (Freidson, 1970).

Obviously, such a debate is particularly crucial when service professions, such as medicine, are being discussed. Recent reforms of health services throughout the developed and the developing world, which were closely related to the concern with the escalating costs of health services (Chernichovsky, 1995a; 1995b), provide some important clues to that controversy. Constraining the ever-raising costs of medical services was one of the goals set by all reforms of health care systems during the 1980s throughout the world. In many Western European societies, these reforms introduced free market economic assumptions to the provision of social services, emphasising managerial efficiency, a balanced budget and competition as means of achieving costs containment. As a result, bureaucratic health care organisations started to make an effort to regulate professional behaviour by administrative means and there is evidence in the public sector that professional practice has been modified in reaction to organisational pressure to reduce the costs of treatment (Annandale, 1998).

The Parsonian analysis of the medical profession elaborated on the "calling" orientation when addressing these issues, albeit indirectly (Parsons, 1939; 1951). Concerned with the exploitation risks embedded in the inequality in knowledge and, therefore in power, in the doctor-patient encounter, Parsons emphasised the role of professional socialisation. During the process of medical education, he claimed, collective rather than individualistic values are internalised. It is these values that assure the primacy of the patient's interests and protect him or her from possible exploitation when tensions between the interests of the professional provider or between the needs of the patient and the interest of the care providing organisation arise.

Nonetheless, these approaches have paid little attention to the social context in which the doctor-patient social interaction is taking place. The organisational culture and characteristics of the work setting are no less important in determining professional practice than the process of professional socialisation (Shuval, 1980). It is thus possible that the medical practice will reflect a combination of professional orientation, the social involvement of the practitioner with the milieu in which he or she practises, and the level of social control exercised in the organisational setting in which medical practice is being performed.

I.5 Hypotheses and methodology

In this study it was hypothesised that:

1. Ownership type will be related to medical practice: doctors in private clinics will administer more revenue-generating procedures and provide less preventive care than those in collective clinics. The latter are, in turn, supposed to provide less preventive health care than doctors in government facilities.
2. Doctors' income will be related to ownership type. In private clinics, doctors will have the highest income, while those in government clinics will have the lowest. Doctors in collective clinics will be in-between.
3. Ownership type will be related to the affordability of the service. Patients' expenditures will be highest in private clinics, lowest in governmental clinics, and intermediate in collective clinics.
4. The type of clinic ownership will be related to the accessibility of service. Private clinics will be more accessible in terms of location and service schedule than collective clinics, and government clinics will be the least accessible.
5. Compared with collective and governmental clinics, private clinics will be associated with inequality between and within households: the more affluent farmers will utilise private health services more often for minor complaints than poorer farmers, and the same pattern is expected for children *vis-à-vis* the elderly, and for men *vis-à-vis* women.
6. Health indicators (mortality, disability, chronic diseases and self-assessed health) will be poorer in villages where clinics are privately owned.

The size and the variability of China present major logistic and methodological problems. In this study, it was decided to concentrate on one province, HeBei, and to draw a sample which would represent that province, rather than to try and capture the variability of China as a whole. For the study reported here, nine counties were randomly sampled from the total of 149 counties in HeBei Province (Table 1), after stratifying by geographical location, which largely determines the type of the economic activity of the county. The counties and the villages sampled reflect the variability in HeBei Province in terms of location, population size, educational level and economic development.

Also the distribution of the villages by ownership type reflects the distribution in rural HeBei. Of the 287 villages for which data was available, 11 (3.8%) had no clinics at all, 153 (53.3%) had private clinics

Table 1 Basic information about the counties surveyed

County	Location	Total population (10,000)	Rural population (10,000)	Villages	Land area (ha)
Jizhou	Lowland area	37.8	33.8	412	61,716
Weizian	Lowland area	52.1	49.3	522	68,659
Pingshan	Mountain area	44.5	41.4	713	30,227
Gaocheng	Pre-mountain area	74.2	69.1	240	55,234
Gaoyi	Pre-mountain area	17.4	15.7	107	16,673
Xuanhua	Near high land	29.2	26.6	366	53,565
Luannan	Plain area	56.2	51.7	594	73,264
Sanhe	Suburb	43.8	33.4	395	37,975
Huanghua	Near sea	38.9	33.5	327	50,214
Total		394.1	354.5	3,676	447,527

only, 61 (21.3%) had collective clinics only, 53 (18.5%) had both private and collective clinics, and 9 (3.1%) had government clinics and branches of government hospitals alone or in combination with private or collective clinics (Table 2). The village sample thus represents the distribution of clinics of different ownership types in China. Comparison with the distribution of clinics by ownership type in HeBei province is not available.

Table 2 Distribution of villages by clinic ownership type (%; n = 287)

Ownership type	Percentage
No clinics	3.8
Private clinics only	53.3
Collective clinics only	21.3
Combination of private and collective clinics	18.5
Government clinics alone or in combination with other types	3.1
Total	100.0

Finally, the sample of the interviewees seems to resemble the sex distribution in HeBei province and the age distribution of China (Table 3).

The nine counties contained 3,676 villages and a population of 3.94 million (Table 1). A random sample of 288 was taken of all the villages – 32 villages in each county. In each village, 15 randomly sampled households and two village doctors were interviewed. A total of 4,319 households was visited and data were collected from 14,895 persons. All adult members of the household, *i.e.* persons aged 15 years or older, were interviewed. Information about the health of the children and adults not present in the

Table 3 Age and sex distribution of HeBei province, the sample villages and interviewees (%)

	HeBei Province (1997)[a]		Villages in the sample		Individuals in the sample	
	n (x 10,000)	%	n	%	n	%
Age						
1-14	16,918	25.5	95,372	22.8	3,167	21.3
15-59	44,959	67.8	254,625	60.8	10,412	70.0
60+	4,406	6.7	68,554	16.4	1,297	8.7
Total	66,283	100.0	418,551	100.0	14,895	100.0
Sex						
Men	33,518	50.3	210,759	50.4	7,626	51.2
Women	33,162	49.7	207,800	49.6	7,269	48.8
Total	66,680	100.0	418,559	100.0	14,895	100.0

[a] Source: China Yearbook, 1998.

house was given by a senior woman present in the household, who could be considered as the health agent of the family (Verbrugge, 1985). Interviews were conducted during the less intensive agricultural season and during all hours of the day to ensure, as far as possible, that a representative sample was taken of the population in the villages sampled.

In addition, 416 doctors were interviewed and 1,262 patient records filled out. Data on the socio-demographic characteristics of the village and its population were collected from the village administration.

I.6 Elaboration of the research

The variables used in this study were defined as follows:

1. Village doctors were defined as persons certified to practise medicine.
2. Socio-economic characteristics of villages were defined by the average per capita income of its residents. The socio-economic characteristics of an individual were defined by sex, age, level of education and the per capita income of the household.
3. Accessibility of service was measured at three levels: the distance from the village to the township and county hospitals; the distance from the clinic to the village centre and the psychological costs of seeking help; and by the distance from each household in the village to the closest village clinic. At the village level, the accessibility of doctors was defined in terms of the time devoted to the medical practice during different agricultural seasons.
4. The doctors' personal characteristics were determined by their sex, age and income. Professional characteristics were measured by years of

formal schooling, professional training, work experience and the proportion of income derived from the medical practice and other work.

5. Professional functioning was measured by the equipment and types of medication in the clinic, patterns of curative care provision, and participation in continuing education (Chernichovsky, 1995a and 1995b; Smith, 1993; Tao *et al.*, 1989).
6. Inequity between households was tested by the association between personal socio-economic and demographic characteristics and patterns of utilisation of health services for minor/severe and acute/chronic diseases.
7. Health was measured by subjective health evaluation, prevalence of chronic diseases and age and sex-specific mortality.

Four research instruments were used to collect data: a form for collecting socio-demographic data from the village administration, a structured questionnaire for interviews at the household level, a structured questionnaire for village doctors and a patient record to be filled out by the doctor for the last three patients he or she treated prior to the interview.

The following data were collected through the structured household questionnaire:

- socio-demographic characteristics, such as household composition (size and kinship), per capita annual income, age, sex, level of education, usual activity and kinship status;
- health status: present and chronic conditions and medication taken regularly;
- self-assessed health, using the SF-12 (Waire *et al.*, 1996);[1]
- illness or injury in the past two weeks, bed disability days, days of restricted activity, school/work loss days;
- patterns of use of health services;

[1] The SF-12 Health Survey is a 12-item (two-minute) questionnaire developed from the SF-36 Health Survey for use in monitoring outcomes for general and specific populations. This survey form has been shown to yield summary physical and mental health outcome scores that are interchangeable with those from the SF-36 in both general and specific populations. This short-form, which was published in early 1995, is already one of the most widely used surveys. For background information on the development of these surveys visit www.sf-36.com. This 12-question survey generates an abbreviated health profile consisting of two summary measures describing health-related quality of life. It has been used extensively as a screening tool and, thanks to its brevity, is frequently embedded into longer, condition-specific surveys.

- health expenditure on doctor visits, medication and travelling;
- preventive care: coverage as recommended for the sex/age group.

The doctors' questionnaire, which was structured as well, was designed to collect the following data:

- socio-demographic characteristics: age, sex, annual income (past year), percent of income generated from medical practice;
- professional qualification: medical training, experience in medicine, specialisation;
- clinic characteristics: weekly hours of medical practice during the intensive and less intensive agricultural seasons, clinic location, equipment available in the facility, number of western and traditional medicines in the clinic;
- medical practice, continuing medical education, and involvement in preventive care;
- relationship with village and upper level administrations.

The patient records to be filled out by the doctors included the following data:

- patient's socio-demographic characteristics;
- the presented problem, diagnosis and severity of the condition;
- the services provided: the diagnostic tests performed and medications prescribed.

II. Results

II.1 Preliminary analyses

Before addressing the research questions, we performed three preliminary analyses. These concerned:

- the construction of a scale for subjective health evaluation;
- a factor analysis of the satisfaction with the services offered by the village doctor; and
- an analysis of the relationship between village characteristics and the clinic type available to the residents.

First, we needed to construct scales for subjective health evaluation and for satisfaction with the services offered by the village doctor. Standardised scores of the SF-12 had not yet been developed for China. In order to reduce and classify the variables, we therefore performed a factor analysis, using the principal components method. Eleven of the twelve items referring to subjective health evaluation constituted a single factor which satisfactorily fitted the data, explaining almost half of the variance. These were: physical health limited accomplishment; physical health limited activity; emotional state limited accomplishment; emotional state limited activity; pain limited activity; felt calm and peaceful; felt full of energy; physical and emotional problems interfered with social activity; difficulties climbing a ladder; difficulties carrying; and general evaluation of health. One factor score was assigned to each respondent.

Factor analysis was also used to collapse the nine items which measured satisfaction with the village doctors. The nine statements constituted two factors, one largely relating to the quality of service and the other to the quality of doctor-patient relationships.

Finally, the relationship between village characteristics and the type of clinic available to its residents was explored. Significant differences were observed in the social characteristics of villages in which the different types of clinics operated. In accordance with official policy, no permanent clinics operated in small villages. In larger villages, more than one type of clinic ownership operated. Nonetheless, the number of village doctors per

1,000 inhabitants in villages without a clinic was not significantly different from the doctor/population ratio in villages where only one type of clinic was available. In villages where there was more than one type of clinic, more doctors per 1,000 inhabitants were available (a post-hoc test showed statistically significant differences at $p < .05$). Thus, variation in clinic ownership types increased the number of village doctors available for the population.

Clinic ownership type was also significantly associated with the average per capita income of the village. In the poorest villages no clinic operated at all, while the richest villages enjoyed the services of collective clinics, alone or in a combination with a private service. This finding reflects inequalities in the accessibility of health care at the village level, as affluent villages can afford to support collective health care service provision. Average per capita income at the village level was, however, not related to the doctor/population ratio. Multiple regression analysis indicated that population size predicts 45% of the variance in the number of doctors, while the average per capita income in the village had no significant effect at all.

Consistent with the three-tier system, all villages were relatively close to the township health centres. There were, however, significant differences in the distance from the villages to the county hospital. Villages with no clinics were located significantly farther from the county hospital compared with villages within which permanent clinics were available.

II.2 The relationship between ownership type and patterns of medical practice

We explored the possibility that village doctors working in clinics of different ownership type are differentially involved in revenue-generating procedures in four ways. First, we looked at the services offered by the village doctor in his/her clinic in terms of the available medication and equipment. Secondly, we asked whether or not doctors in clinics of different ownership types charged for the same services and whether they differed in the proportion of patients who were referred to a higher level facility. Thirdly, we explored the suggestion that private village doctors were less likely to invest in public health. Finally, we identified patients who presented similar complaints and searched for variability in treatment. In China, the number of medications in the clinic reflects the size and status of the practice. In the clinics surveyed in this project, ownership type was not significantly associated with the total number of medications held in the clinic, but the composition of the medications available differed

significantly. It was hypothesised that private doctors would prefer using western or traditional prefabricated medications, since traditional Chinese herbs generate the least profit and consume more space and preparation time. The information provided by the village doctors, however, only partially supported this hypothesis. Village doctors in private clinics held fewer traditional Chinese medications in their practice, but there was no indication that these were replaced by western or prefabricated traditional Chinese medications. Government-owned clinics, which are more spacious and more frequently have a pharmacist on the staff, held relatively fewer western medications and more traditional Chinese medications.

There were no indications that village doctors in the different ownership types invested differentially in equipment such as that needed for urine tests and infusion, sterilisation equipment, blood pressure apparatus and stethoscopes. Only the number of short-stay beds in the clinic varied significantly with ownership type. Private clinics had the fewest inpatient beds, while government clinics had the most.

It was also hypothesised that village doctors in government-owned clinics would be more likely to waive charges for simple procedures, while private village doctors were assumed to charge for all the procedures they performed. This hypothesis was not supported. For all the ten medical procedures studied[2], fewer private village doctors reported charging their patients than doctors employed by the government. It is possible that private practice allows for more flexibility and needs to be more competitive than collective and government work settings. In the latter, payment is dissociated from the medical service; charges are paid in the clinic office and not directly to the doctor who performs the procedure. Furthermore, in governmental and collective clinics, the administration or peers exercise more social control over the doctors. This is especially the case with government-owned clinics, but true for collectively-owned clinics as well, although to a somewhat lesser degree. Finally, hospitals were increasingly encouraged to generate their own income in addition to the budget allocated by the government. The higher proportion of village doctors in government-owned clinics who charge for treatment and medical procedures may reflect this policy.

The possibility that ownership type will be associated with the proportion of patients referred by the primary care village doctor to a

[2] Home visits, laboratory tests, diagnostic tests, bandage, injection, infusion, inpatient observation, minor surgery, public health and traditional practices.

higher level facility for treatment or consultation was also explored. Referring patients to a higher level facility reflects not only the professional self-perception of the practitioners, but also their willingness to admit the limits of their competence and to transfer possible income to another health organisation. Data on the number of patients treated in the clinic, however, were provided by only 65.1% of the village doctors interviewed. No significant differences between the proportion of patients referred to a higher level facility was observed (F = 2.30, NS), but the variation observed was incompatible with the hypothesis. Doctors in private clinics referred a higher proportion of their patients ($\overline{X}$ = 2.41%, σ = 5.36), while village doctors in government-owned clinics referred the lowest proportion of their patients ($\overline{X}$ = 0.51%, σ = 1.10). This difference, however, reflects their differential professional training (see below) rather than profit-generating orientation.

It was hypothesised that village doctors in private practice would be less involved in public health issues. The findings on this hypothesis are inconsistent. Fewer private doctors reported discussing health issues with the village administration than doctors in collective and government settings but, at the same time, private doctors reported more involvement in discussing health services and needs with township authorities. Private practitioners and doctors in collective clinics were less knowledgeable about the immunisation coverage in their village, but no significant differences were observed regarding the provision of public health services.

In an effort to explore the degree to which village doctors in the three different practice settings followed a similar treatment protocol or differ in the performance of profit-generating procedures, we focused on the treatment provided for patients who present comparable complaints. Of the 1,262 patient records filled out by the 416 village doctors interviewed, four conditions were most common: upper respiratory infection (n = 476; 37.7% of the patients), sore throat (n = 288; 22.8% of the patients), hypertension (n = 193; 15.3% of the patients) and diarrhoea (n = 181; 14.3% of the patients). Of these, only cases evaluated by the village doctor as non-severe were included in the analyses.

Starting with the most common condition, non-severe upper respiratory infection, it seems clear that private village doctors were least concerned with profit generation, particularly when compared with doctors in government-owned clinics. Doctors working for the government, *i.e.* in clinics established in rural areas by government-owned hospitals, performed more diagnostic tests and more treatment procedures than

village doctors in collective clinics. The least number of diagnostic tests and treatment procedures were performed by private practitioners. It is very possible that village doctors in government-owned clinics submitted their medical practice to the pressure imposed on hospitals to generate resources. Alternatively, the practice patterns of doctors in government-owned clinics may reflect their professional socialisation. As will be shown below, half of the doctors in government-owned clinics were trained in medical schools and higher level hospitals, where laboratory equipment is generally more accessible and used.

Similar patterns were observed in respect of non-severe sore throat and hypertension. This pattern, however, was not found in the treatment of non-severe diarrhoea, for reasons that are not clear to us. These findings may, of course, reflect patterns of help-seeking behaviour as well as differential professional training. It is possible that villagers tend to turn to government-owned clinics when they perceive their health problem is more severe or too complicated to be handled by the private village doctor.

II.3 Relationship between the characteristics of village doctors and type of clinic ownership

With regard to the socio-demographic, socioeconomic and professional training characteristics of village doctors under the three types of clinic ownership, it was hypothesised that, compared with village doctors in government clinics, private practitioners would be older, less educated in terms of both their general education and professional training and would have a higher income, while the characteristics of village doctors in collective clinics would be in-between.

The socio-demographic characteristics of the village doctors in the survey, as presented in Table 4, show that the only significant difference observed was that nearly half of the doctors employed in government-owned clinics were women, compared with about one-fifth in the other two settings. It seems that government-owned clinics offer women the opportunity to practise medicine without having to cope with the competition on the free market and possible prejudices about women's competence.

It was also hypothesised that the socioeconomic characteristics of the village would be associated with ownership type. This hypothesis was partially supported by the data. The net income of the doctors in the three different settings did not differ significantly, but the sources of their income did. As expected, medical practice was the major source of income for doctors in government-owned clinics, while a smaller part of the income from medical practice was generated from fee-for-service. Thus, medical

practice comprised about half of the income of private practitioners, compared with almost three-quarters of doctors in government-owned clinics. Almost all the income from the medical practice of village doctors in private clinics was generated from fee-for-service. Patients' fees comprised only about 25% of the income from medical practice among doctors in government-owned clinics, and 79% of the income of doctors in collective clinics.

Finally, it was hypothesised that the professional characteristics of village doctors would vary with ownership type. Government-owned clinics were introduced into the villages after privatisation of health services failed to meet the needs of the population in quantity or quality of care. It was therefore hypothesised that government-owned clinics would employ more experienced and better trained doctors than private village clinics. It was predicted that the characteristics of village doctors in collective clinics would be located in between those of doctors in private and government-owned clinics. This hypothesis was partially supported. Although no significant differences in the professional experience of village doctors in the three settings were observed (Table 4), doctors in government-owned clinics had practised in the village for significantly fewer years than doctors in private and collective clinics. These findings held true after controlling for age and the total years of professional experience.

As predicted, village doctors in government-owned clinics were better trained, two-fifths of them having studied in a medical school and having had at least one training period in a county or city hospital. Only about one-quarter of the village doctors in collectively-owned clinics and 15% of the private doctors had an equivalent training. Although the cumulative length of training did not vary significantly with clinic ownership type, doctors in government-owned clinics had significantly more training periods than village doctors in private or collective settings. Village doctors in collectively-owned settings were more likely to be specialised in one of the fields of medicine and had participated in continuing education (refresher courses) significantly more recently than private practitioners.

II.4 Relationship between ownership type and the affordability of medical care

Affordability of health care is difficult to measure. In this study we tried to overcome some of these difficulties by comparing out-of-pocket expenditures of farmers in villages where the various types of clinics were available, and by exploring for variations in utilisation of health services.

Table 4 Socio-demographic, socioeconomic and training characteristics of the village doctors by ownership type (percentage, means and standard deviation)

		Private (n = 251)	Collective (n = 132)	Government (n = 29)	Total (412)
Sex:	- percentage of women	21.1	22.7	48.3	23.5
Age:	- mean	43.4	41.3	39.6	42.5
	- standard deviation	(11.7)	(10.9)	(10.8)	(11.4)
Education:	- mean no. of years	9.2	8.7	8.0	9.0
	- standard deviation	(6.8)	(2.5)	(3.0)	(5.5)
Annual income (in yuan[a]):					
	- mean	4,599.6	4,588.4	5,073.1	4,672.2
	- standard deviation	(3,331.3)	(3,434.9)	(3,246.6)	(3,353.8)
Percentage of income generated from medical practice:	- mean	48.4	53.1	73.9	51.5
	- standard deviation	(28.0)	(29.1)	(32.3)	(29.3)
Patients' fees as the main source of income from medical practice:					
	- percentage	95.9	79.1	25.9	85.7
Experience in medicine:					
	- mean no. of years	22.1	20.8	20.0	21.5
	- standard deviation	(11.1)	(11.2)	(10.9)	(11.1)
Experience in the village:					
	- mean no. of years	19.9	19.0	13.6	19.2
	- standard deviation	(11.0)	(11.3)	(10.6)	(11.1)
Professional training (% of doctors)					
- Apprentice or army training		8.6	7.1	4.0	7.9
- Local health centre		19.8	15.9	8.0	17.8
- Higher level hospital		28.8	33.3	32.0	30.5
- Local medical school or college		27.6	19.0	16.0	24.1
- Medical school with higher level hospital		15.2	24.6	40.0	19.8
Years trained:					
	- mean no. of years	2.6	3.2	3.0	2.8
	- standard deviation	(2.9)	(2.8)	(1.8)	(2.8)
Total no. of independent training periods:					
- Mean		2.1	2.1	3.7	2.2
- Standard deviation		(2.3)	(1.8)	(3.4)	(2.2)
Specialisation:	- percentage specialised	47.1	58.1	48.1	50.8
Continuing education, last course:					
- Average no. of months ago		16.7	12.5	13.2	15.3
- Standard deviation		(11.7)	(11.3)	(12.0)	(11.7)

[a] 1 yuan = US$ 0,12 at the time of the study.

The total out-of-pocket health expenditures during the two weeks prior to the interview did not differ significantly between the respondents living in villages in which different types of clinics operated (Table 5). Post-hoc examination, however, revealed that farmers' expenses were significantly higher in villages where both collective and private clinics were available than in villages where only collective clinics operated. This finding held true after controlling for age, sex and per capita income of the household ($F = 2.2$, $p = 0.07$ for the main effect of clinic type), and when persons who did not have any health expenditures were excluded from the analysis. Similarly, there were no significant differences in out-of-pocket expenditures on medication and transport to health services. Controlling for age and household per capita income did not modify these findings (main effects of $F = 1.9$, $p = 0.78$ and $F= 0.5$, $p = 0.76$, respectively). In all these analyses expenditures were significantly related to age, but not to the households' per capita income.

Table 5 Out-of-pocket health expenditures by clinic ownership type (in yuan, mean and standard deviation)

	Total health expenditures past two weeks		Expenditures on medications past two weeks		Expenditures on transportation past two weeks	
No clinic	11.9	(116.6)	13.8	(117.6)	0.2	(4.2)
Private only	10.6	(153.4)	8.8	(135.0)	0.7	(24.1)
Collective only	7.3	(98.0)	5.5	(43.0)	1.8	(87.9)
Private and collective	21.4	(356.0)	14.2	(177.1)	0.6	(7.7)
Government	13.0	(86.3)	12.7	(84.6)	1.3	(16.8)
Total	11.9	(195.0)	9.4	(128.2)	0.9	(45.1)
Statistics	*F = 2.1 NS*		*F = 2.0 NS*		*F = 0.4 NS*	

Another way of looking at affordability of health care was to look at the help-seeking patterns of persons who have chronic and acute diseases and the reason for avoiding a visit to the doctor when needed (Table 6). The interval since the last visit of the chronically ill to a doctor was not associated with the type of clinic available in the village. Nor did the use of medication for chronic diseases vary with clinic ownership. However, significantly more persons who suffered acute conditions used medication in villages where both private and collective clinics were available.

Of the persons interviewed, 1,376 reported that they did not seek medical help, although they were ill. The modal reason for avoiding a visit to a doctor when needed was that the illness was not serious enough. There

were, however, significant differences between the reasons mentioned by the farmers dwelling in villages with different clinic ownership types. The severity of the health conditions was significantly more often mentioned in villages where both collective and private clinics operated. As we have seen above, in these villages out-of-the-pocket health expenditures tended to be relatively high. In villages where governmental clinics were available, instrumental difficulties such as lack of money, time or means of transport, were significantly more often mentioned, while 'other' reasons, such as dissatisfaction with the service, were least frequently mentioned.

It may thus be concluded, that the presence of government-owned clinics in a village did not increase the affordability of health care. This may be due to the unique combination of patterns of medical practice and the charging policy described above.

Table 6 Utilisation of health services by clinic ownership type (percentage, mean and standard deviation)

	Last doctor visit – chronically ill (mean months ago)		Chronically ill used medication (%)	Acutely ill used medication (%)	Reasons for not going to the doctor when needed (%)		
					Instrumental constraints	Condition not serious	Other
No clinic	8.2	(13.9)	53.8	32.9	19.1	63.2	17.6
Private only	5.9	(11.0)	52.2	34.2	20.4	62.2	17.3
Collective only	5.6	(11.2)	53.3	31.6	19.6	69.8	10.7
Private and collective	5.0	(8.5)	57.7	42.2	12.9	79.1	8.0
Government	6.6	(10.3)	52.5	29.9	30.5	67.8	1.7
Total	5.8	(10.9)	53.5	35.0	19.2	67.3	13.5
Statistics	*F = 1.6 NS*		*X^2 = 4.0 NS*	*X^2 = 12.8 P <.05*	*X^2 = 39.6 P <.001*		

II.5 Relationship between clinic ownership and the accessibility to health services

The research question on this relationship was tested at three levels: the village, the doctor and the individual. At the village level, we have focused on the availability of preventive health care, *i.e.* the number of village doctors involved in epidemic control and mother and child health (MCH). At the level of the village doctors, we looked at the association between ownership type of the clinic and the time devoted to care provision during the intensive and the slack agricultural seasons, as well as the distance from the clinic to the village centre. At the individual level, we searched for differences in the psychological costs associated with the utilisation of health services and for differential accessibility to preventive care by

individuals residing in villages with different types of clinics and treated by doctors working in clinics under different ownership types.

As expected, the number of doctors who were involved in public health varied with ownership type (Table 7). In villages where both collective and private clinics existed, significantly more doctors were involved in epidemic control. A similar pattern, though not statistically significant, was observed regarding MCH. These patterns held true after controlling for population size.

Table 7 Number of doctors involved in public health by ownership type (mean and standard deviation)

	Epidemic control		Mother and child care	
No clinic	0.2	(0.4)	0.2	(0.4)
Only private	0.9	(1.0)	0.7	(0.9)
Collective	0.9	(0.7)	0.6	(0.7)
Collective and private	1.3	(1.3)	0.9	(1.2)
Government and others	1.2	(1.9)	0.6	(0.5)
Total	1.0	(1.0)	0.7	(0.9)
Statistics	*F = 3.9* *P <.01*		*F = 1.3* *NS*	

No statistically significant differences were observed between the working hours of village doctors working in clinics of different ownership types. Yet village doctors who are employed by the government seem to work more hours. This pattern was observed during both the intensive and the slack agricultural seasons. Previous reports interpreted the decline in working hours during the intensive agricultural season in terms of the economic interest of the village doctors. It was suggested that doctors in private practice leave their clinical practice for farming in order to ensure the income generated from the family's enterprise. However, the observation that the working hours of village doctors on governmental contract also decline during the intensive agricultural season may allude to a different hypothesis. It is possible that, during this season, the *demand* for medical care declined, since farmers tend to avoid assuming the sick role and delay seeking help for as long as they can perform their farming duties.

Significant differences were observed between clinic ownership type and distance from the centre of the village. Where government clinics were available, services were less accessible and located farther away from the village centres than private and collective clinics. However, according to the data collected from the household sample, there were no significant

differences in the distance from the farmers to the clinics of different ownership types.

Psychological barriers to the accessibility of health services were measured through patients' general satisfaction with the health services provided in the village and through statements focusing on the village doctor and the services he/she provided (Table 8). The least satisfied with the health care system in their village were respondents in villages with no clinic at all. Most satisfaction with the services offered by the village doctor was expressed by respondents from villages where government clinics operated along with collective and private clinics. Nonetheless, there were no significant differences in the satisfaction with doctor-patient relationships by ownership type.

The accessibility of individuals to preventive care was examined in two

Table 8 Attitudes towards village health services (means[a] and standard deviation)

	General satisfaction with system		Satisfaction with doctor's quality of service		Satisfaction with doctor-patient relationships	
No clinic	2.80	(0.48)	0.10	(0.94)	0.01	(0.95)
Only private	2.92	(0.31)	- 0.02	(1.01)	0.01	(0.97)
Collective	2.90	(0.34)	- 0.09	(0.93)	- 0.05	(1.11)
Collective and private	2.88	(0.36)	0.13	(1.07)	0.02	(0.95)
Government and others	2.87	(0.34)	0.24	(0.91)	- 0.005	(0.95)
Total	2.90	(0.33)	0.002	(1.00)	- 0.003	(1.00)
Statistics	*F = 5.61 P <.001*		*F = 7.75 P <.001*		*F = 0.74 NS*	

ways. First, we looked at the 153 patients over the age of 50 who presented an acute health problem to the village doctors. The question explored here was whether or not private village doctors, doctors in collective clinics and doctors in government settings differed in providing early detection of cardiovascular risk factors and the relevant health education. As expected, a higher proportion of doctors employed by the government provided three of the four such services examined, while the lowest proportion was observed among private village doctors (Table 9). Secondly, data collected from interviewees of the same age was analysed, differentiating between the types of clinics available in their villages. In these analyses, no significant relationship was observed between ownership type and the proportion of respondents who received cardiovascular checks and health education.

Table 9 Proportion of village doctors providing a cardiovascular control service by ownership type (%; n = 416)

	Blood pressure control	Blood test	Health education	
			Diet	Exercise
Private	52.1	6.3	84.4	67.7
Collective	55.6	15.6	82.2	75.6
Government	100.0	62.5	87.5	87.5
Total	55.7	12.1	83.9	71.1
X^2	*6.9**	*22.7***	*0.2*	*2.0*

* P <.05; **P <.001.

II.6 The relationship between clinic ownership type and equality in the utilisation of health services

For the purposes of exploring the relation between clinic ownership and equality in the utilisation of health services, only data collected from respondents who recalled that they had had an acute health problem during the two weeks before the interview were included in the analysis. Of the persons interviewed during the study, 2,006 reported such an acute situation, and 468 of them did not seek professional help. Logistic regression analysis indicated that the ownership type of a clinic was not related to non-utilisation of village doctor services. As expected, per capita income increased the probability of help-seeking, but there was no significant interaction between income, clinic ownership and help-seeking behaviour. Thus, household per capita income remained a predictor of inequality and unequal access to health care, but was unrelated to ownership type.

Intra-household inequality in the utilisation of health services was observed only in relation to age. No gender differences were observed, but children were seven times more likely to be taken to the village doctor when sick. But once more, help-seeking behaviour was unrelated to the type of clinic available in the village.

Of the 2,006 respondents who reported a recent acute health problem, 462 did not take any medication. Although 31.2% of those who did not see a village doctor for their acute problem did not take any medication to relieve their symptoms either, the results of logistic regression analyses indicate that clinic ownership type was related to the use of medication. In villages where government-owned clinics were not available, acutely ill persons were significantly more likely to take medication. These findings, however, should be considered with caution, as the regression model failed

to reproduce the raw data (*i.e.* the estimated model differed significantly from the raw data collected).

Per capita income by itself was not related to the use of medication. A statistically significant correlation between income, ownership type and the use of medication was observed only for villages where only private clinics were available. In these villages, income explained 40% of medication taken by persons who suffered an acute health condition.

Intra-household inequality was observed for age, but not for sex. Medications were purchased more often for children and the elderly, while adults were least likely to use medicines for acute health problems. Once again, these patterns were not dependent on ownership type. Yet this final model was the only one which successfully reproduced the raw data. It may be concluded, therefore, that the types of clinic available in the village predict the use of medicines for acute problems. In villages where government-owned clinics operate, fewer persons take medication for such conditions. Income is positively related to medication consumption, and so is being young and old. Where only private practice is available, the better-off households were more likely to use medicines for acute illnesses.

II.7 The relationship between clinic ownership and health of the population

In order to examine the relation between clinic ownership and health of the population, we analysed the data collected from individual respondents during the personal interviews and the data collected from the village authorities. At the individual level, the association between the clinics available in the village, in terms of ownership types, and the reported number of chronic health problems and self-assessed health, as measured by the SF-12, was studied, controlling for age, sex, level of education, and household per capita income (Table 10).

At the village level, the association between ownership types and the mortality rates of different age groups was explored (Table 11). Since the investment in public health differed with ownership type, it was hypothesised that better health would be observed in villages where health services were provided by government clinics, while the poorest health would be observed in villages where only private services were available.

At the individual level, this hypothesis was not supported. Chronic health problems, disability and acute illness were more prevalent in villages where services were provided by government-owned clinics. Similarly, self-assessed health was poorer in villages with government-owned clinics and poorest in villages with no clinic at all.

Table 10 Health of individuals by clinic ownership type (non-standardised B coefficients, multiple regression results)

	Disability[a]	Total number of chronic health problems[a]	Total number with acute illness[a]	Self-assessed health[b]
Clinic ownership[c]				
No clinic	0.003	- 0.11*	- 0.14*	0.04
Private only	- 0.07*	- 0.06	- 0.16***	0.13***
Collective only	- 0.04	- 0.09*	- 0.15***	0.15***
Private and collective	- 0.07*	- 0.05	- 0.12**	0.12*
Age	0.03***	0.02***	0.01***	- 0.02***
Sex (women)	- 0.003	- 0.01	0.04**	- 0.05**
Level of education	- 0.06***	- 0.03***	- 0.02***	0.02***
Per capita income	- 0.006***	- 0.004*	- 0.005*	0.01***
Constant	- 0.43***	- 0.28***	- 0.13**	0.49***
R^2	*0.28***	*0.09***	*0.05***	*0.13***

[a] The higher the coefficient, the higher the disability, the more chronic and acute conditions. Based on standardised scores.
[b] The higher the coefficient, the better the health assessment.
[c] Omitted category = government-owned clinic.
* p <.05; ** p <.01; *** p <.001.

Table 11 Mortality[a] by clinic ownership type (non-standardised B coefficients, multiple regression results)

	Mortality of children under 1 (per 1,000 relevant population)	Mortality of children 1-14 (per 1,000 relevant population)	Mortality of adults 15-60 (per 1,000 relevant population)	Mortality of elderly 60+ (per 1,000 relevant population)
Clinic ownership[b]				
No clinic	- 5.05	3.38	1.22	20.71
Private only	41.00	0.71	- 2.29	1.71
Collective only	22.40	0.59	- 0.15	- 2.57
Private and collective	27.57	1.14	- 0.82	2.76
Per capita income in the village	- 0.01	- 0.0001	- 0.001*	- 0.02
Distance from township hospital	- 7.76*	- 0.10	- 0.39	1.99
Constant	14.83	0.98	7.77**	78.60***
R^2	*0.03*	*0.02*	*0.05**	*0.01*

[a] Past two years.
[b] Omitted category = government-owned clinic.
* p <.05.

Very weak relationships were observed between mortality and the type of clinic in the village. Infant mortality was not related to ownership type, while child mortality in the ages 1-14 was significantly higher in villages where government-owned clinics operated and in villages with no clinic, when compared with villages with only privately-owned clinics and those with only collectively-owned clinics. The only statistically significant difference in adult (15-59) mortality was observed between villages with only privately-owned clinics and villages with both private and collectively-owned clinics. Adult mortality was higher in villages where both types of clinics were available. No significant differences were observed in the analysis of mortality among the elderly. Maternal mortality could not be analysed reliably because of the small number of cases. In our data, maternal mortality was 49.2 per 100,000 live births, far below the estimated rates published by the World Bank (114.5 per 100,000 live births). It should be noted, however, that maternal mortality in our study included only three of the four criteria for maternal deaths, *i.e.* deaths during labour, deaths during the first four weeks after labour and deaths which occurred after the 28th week of pregnancy, and did not include deaths caused by induced abortions. Maternal mortality was recorded in only three villages, so that analysis by type of clinic ownership was not possible.

It is worth noting that the average per capita income in the village was significantly related to mortality rates of adults only. Mortality, however, was related to the accessibility to higher level health facilities only in relation to infant mortality. Infant mortality was significantly lower in villages located closer to a township hospital: a decline of 1.2% for each kilometre ($ß = -0.11$, $p < 0.05$).

II.8 Conclusions

The purpose of this project was to examine whether health care delivery patterns and accessibility to health care are associated with the form of clinic ownership in rural HeBei in the People's Republic of China. With regard to the distribution of health care, the preliminary analyses in this study showed that clinic ownership was associated with the characteristics of the village. Small villages were less likely to have a clinic at all. These villages were also poorer and therefore had more health needs. Yet they were located on the county's periphery, farther from a county hospital. Larger villages, which were also generally more affluent, enjoyed a variety of primary health services.

The best predictor of the number of doctors in the village was population size. However, villages with more than one type of clinic ownership had a higher doctors-per-population ratio.

Government-owned clinics were established in villages where health needs – as measured by subjective health evaluation, prevalence of chronic conditions and proportion of disabled persons – were greater. However, in the small, poor, peripheral villages, where equivalent health needs were observed, there were no clinics at all.

With regard to the association between clinic ownership type and medical practice, there was no evidence that the medical practice of doctors in private clinics was more oriented toward profit generation as compared with doctors in other types of clinic. Doctors in private clinics did not prescribe more western or prefabricated Chinese medications (which are more lucrative than traditional Chinese herbs) than governmental or collective clinics. Nor was there any indication that clinics of different ownership types invest differentially in equipment. Only the number of inpatient beds varied with ownership type, with private clinics having the lowest number.

Nor did doctors in private clinics charge more for medical services than their counterparts in other clinics. Private doctors enjoyed more freedom, which allowed for a more flexible charging policy, and actually charged for about half the procedures performed. On the other hand, in collective and government-owned clinics, where peer and administrative social control constrained such freedom, patients were charged for almost all the procedures performed. Doctors in clinics of different ownership type differ in the proportion of patients they refer to higher level facilities, but this reflects differences in professional training rather than differences in profit orientation.

There was no indication that clinic ownership was associated with the involvement of doctors in public health. Yet more doctors were involved in public health in villages with both private and collective clinics.

Doctors in government-owned clinics offered more cardiovascular risk prevention services, probably as a result of different professional training.

The personal and professional characteristics of the village doctors were related to the ownership of the clinic in which they practised:

1. Government-owned clinics had a higher proportion of female doctors.
2. Most of the total income of village doctors in government-owned clinics came from government salaries and was largely independent of

patients' out-of-pocket fees. About half of the income of doctors in private clinics and about two-fifths of that of doctors in collectively-owned clinics was dependent on patients' fees.
3. Government employees were better trained than doctors in private and collectively-owned clinics.
4. Doctors in collectively-owned clinics were more likely to have specialised in one of the fields of medicine.
5. Doctors in private clinics were less likely to participate in continuing professional education and refresher courses.

The privatisation of primary health care in HeBei was not associated with unequal access to, and affordability of, health care. The total out-of-pocket health expenditure or that for medication or transport to a health service were independent of clinic ownership type. Nor did help-seeking behaviour (as measured by doctor visits) or use of medication vary with ownership type. Although there were significant differences between government clinics and other clinics in respect of their distance from the village centre, there were no significant differences in the distances from the farmers to clinics of different ownership type. No statistically significant differences were observed between the working hours of village doctors working under different ownership regimes.

The number of doctors was larger and the access to medication was easier in villages where both collective and private clinics existed, that is, in the more affluent villages. In villages without government-owned clinics, sick persons were significantly more likely to use medication. Per capita income was related to medication use only in villages where private clinics were available.

Inequality of access to and affordability of health care was related to age. Children and the elderly enjoyed greater access, including to medication. Per capita income was related to inequality in access to health care among people of working age. This was, however, unrelated to clinic ownership type. Accessibility of health care was not associated with gender.

Finally, this study demonstrated that there was a relationship at the individual level between clinic ownership type and health of the population. Chronic health problems, disability and acute illness were more prevalent in villages where services were provided by government-owned clinics. Similarly, self-assessed health was poorer in villages with government-owned clinics and the poorest in villages with no clinic at all.

There was a very weak relationship between clinic ownership type and mortality. Child mortality (1-14 years), in particular, was significantly

higher in villages with government clinics and those without a clinic. Adult mortality (15-59 years) was higher in villages where both private and collective clinics were available, as compared with villages where only private clinics were operational. Mortality was related to the accessibility of higher level health facilities only in the case of infant mortality.

The findings suggest that inequality in the distribution of health care exists, but that the social context in which medical practice takes place is far more important for understanding access to and affordability of medical services than the direct dependence of doctors' incomes on revenues from medical practice and hence ownership type of the clinic. This will be further discussed in Section III.1.

III. Discussion

III.1 Scientific implications

The theoretical approach adopted in this study was heavily influenced by recent trends in the sociology of medicine, namely the analysis of health care provision in terms of conflict theory (Annandale, 1998; Shuval and Anson, 2000). In a nutshell, this critique suggests that the process of privatisation of social services, including medical care, was the result of the re-examination of the ideology of the welfare state and the increasing unwillingness of the rich to support the needy members of society. The reforms in health services during the 1980s were aimed at cost containment, and changed both the mode and the levels of public financial support. It was suggested that privatisation and the budget cuts resulting from the reforms in health provision policy have altered patterns of medical practice and increased inequality in access to health and health care. According to this argument, the generation of revenues and keeping within budget constraints have become a major concern and motive among private care providers, be it the individual practitioner or a care-providing organisation.

Although no such change in ideology or formal policy took place in China, the primacy given to the restoration of the economy after the Cultural Revolution, and the "Socialist Market Economy" policy reforms of 1979, brought about quite similar processes. In an effort to increase the economic productivity of the majority – the rural population – a system of "household responsibility" was implemented. The measures introduced did indeed increase the economic productivity and the standard of living of a large proportion of the population, but also undermined the collective basis of the welfare services of the village and the three-tier health care system. The village no longer had sufficient collective funds to support the village clinic and the services of the village doctor. Health services at the village level rapidly became private practices and township and county hospitals were increasingly pressured to raise at least part of their own finances.

The three common primary care clinic ownership types that developed were private, collective and government-owned clinics. These differed in

the immediacy of the association between the practitioners' income and medical practice. At one end of the continuum were private practitioners, whose income from medical practice was completely dependent on patients' fees for the medication prescribed and sold to them, and on the treatment and diagnostic procedures performed. At the other end of the continuum were the salaried doctors employed by the government or by county hospitals. Rural China thus offered the opportunity to test hypotheses embedded in conflict theory and derived from the critique of sociologists of medicine of the ongoing process of privatisation of health services in western societies.

The picture that emerged from the data collected from 288 villages in nine counties in HeBei Province is far more complicated than the simplistic argument that economic motives lead to inequity in the distribution of health services, inequality in access to health and health care, and to revenue-oriented medical practice. Indications of inequity were found in the distribution of health care, but the data also suggested that the social context in which the medical practice took place is far more important for understanding access to, and affordability of, health services than the direct dependence of income on practice.

Reports from post-industrial societies consistently show inequity in the distribution of health services (Chernichovsky and Shirom, 1996; Shuval and Anson, 2000). In these societies, fewer health facilities and health personnel are often available for rural populations, on the periphery, for the poor, and for social groups with higher health needs. The case of rural HeBei provides some support for this thesis. Five observations lead us to conclude that private and collective health provision systems do not ensure equity in the distribution of health care provision, and that the public (government) system only partially promotes equity.

First, the number of doctors per 1,000 inhabitants was not related to the average household income in the village. Secondly, the best predictor of the availability of a clinic in the village was the number of its residents but, in the poorest peripheral villages, no clinic was available even after controlling for population size. Thirdly, the government seemed to intervene and establish clinics, staffed by better trained personnel, to villages located closer to county hospitals, the employers of the doctors sent to serve the villages. The government initiative was not related to shortage of doctors in these villages, as they enjoyed the highest doctor per population ratio. Further, government-owned clinics, more than collective and privately owned clinics, tended to include inpatient beds. Since villages with government-owned clinics were located closer to county hospitals, it

may be concluded that inpatient beds are not equally distributed and tend to be located closer to the centre of a region.

Nonetheless, it seems that government-owned clinics were introduced as a response to the needs of the population. Compared with villages where private and collective clinics operated, government-owned clinics existed in villages where poorer health, higher rates of chronic conditions, disability, acute diseases and higher child mortality were observed. These last findings could explain the greater involvement of doctors employed by the government with the village administration on health issues rather than the unwillingness of private doctors to become involved in non-profit medical practice. Nonetheless, comparable health needs were reported in villages with no clinic at all. Generally, these were small, poor villages, located farther from a county hospital. Government-owned clinics were thus established to meet the population health needs in villages located nearer the county centre.

There were no indications that the privatisation of the primary health services in rural China increased inequality in access to and affordability of health care. This conclusion is based on the following observations. Firstly, the total out-of-pocket health expenditures were quite comparable and unrelated to the ownership of the clinics available in the village.

Secondly, the type of ownership of the clinics in the village was not associated with help-seeking behaviour. No differences were observed in doctor visits and, in villages where both private and collective clinics existed, the prevalent reason given for not seeing a doctor when needs were perceived was the nature of the health problem. It was in the villages where government-owned clinics operated that instrumental difficulties restricted seeking for help.

Similarly, privatisation did not affect access to and the affordability of medication. On the contrary, most pharmaceutical treatment was reported by persons in villages where both private and collective clinics were available, the least in villages with a government-owned clinic. As will be discussed below, this pattern is not necessarily related to the profit village doctors generated from selling medicines.

Finally, type of clinic ownership was not associated with the availability of public health. The number of practitioners providing public health services did not vary with the ownership of the clinics in the villages. Nevertheless, inequality in access to preventive health care was found. Village doctors in government-owned facilities provided most preventive care, such as cardiovascular risk control, and private doctors the least.

These patterns cannot, however, be explained by economic incentives alone, although private village doctors were less likely to charge their patients for these procedures than doctors in collective or government-owned facilities. Doctors employed by the government were better trained and possibly conditioned to pay more attention to the long-term importance of such individual preventive care beyond immediate, curative, health needs.

The third issue raised by sociologists of medicine who are concerned with the process of privatisation of social services in Western Europe is its effect on medical practice. As we have said, in post-industrial societies this process is closely related to the efforts to hold down the increasing costs of the welfare state. Two main concerns were expressed here, that private practitioners were motivated by profit and that there was pressure on practitioners employed by care-providing organisations to reduce the costs of care. In this study, evidence was found only for the latter.

As has been observed in previous research, medical practice accounts for only half of the income of village doctors in private and collective practices, compared with three-quarters of the income of the village doctors in government-owned clinics. The suggestion that farming and business will motivate private village doctors to neglect their medical practice during the intensive agriculture season was not supported by the data. Village doctors in all three ownership types practised fewer hours per week during the intensive agriculture season, probably because the demand for health services declined. It is very possible that farmers delayed taking care of their health needs, because they could not afford to take time off farming.

For private village doctors, fee-for-service accounted for almost all their income from medical practice. As was expected, only a small proportion (one quarter) of the income of doctors in government-owned clinics was generated from such fees. Yet there were no indications that doctors in private clinics invested more in profit-generating equipment than those in collectively and government-owned clinics.

Nor was there any indication that private practitioners performed more profit-generating medical procedures or prescribed more medication than doctors in collective or government-owned clinics. On the contrary, the latter reported that they performed more diagnostic tests and prescribed more drugs than doctors in privately owned clinics for the same conditions. While these findings can possibly be explained by differential professional socialisation, both in basic training and in patterns of participation in

continuing education, professional socialisation cannot explain the association between ownership type and charging behaviour.

Almost all village doctors employed in government-owned clinics charged their patients for each diagnostic test and treatment procedure performed, except for public health procedures and treatment in traditional Chinese medicine methods. Fewer village doctors in private clinics charged their patients for each procedure, except public health, while the charging behaviour of doctors in collectively-owned clinics was closer to that of doctors in government-owned clinics. It is these findings that indicate the importance of the social context of medical practice in explaining charging behaviour, rather than the maximising profit motivation.

The work environment of private practitioners is the most flexible. It is the individual doctor who decides under what conditions he or she will work and how much to charge the individual patient. Doctors in collectively and government-owned clinics do not enjoy such freedom and are much more susceptible to mechanisms of social control. In collectively-owned clinics, doctors are subject to peer control; in government-owned clinics to administrative guidelines and control.

Moreover, doctors in government-owned clinics often are newcomers to the village. It may be hypothesised that they are less socially involved with the village population compared with doctors in collective and private settings. Government employees are thus more inclined to submit their practice and charging behaviour to administrative decrees, including those imposed by the increasing pressure on county hospitals to raise some of their own funds. While, at least when judged by length of practice in the village, doctors in collective clinics are as socially involved with the villagers as are doctors in private clinics, peer control imposes charging behaviour that is closer to government-owned clinics than to private practitioners' charging patterns.

In sum, it seems that the unplanned collapse of the collective health service in rural China did indeed increase inequity in the distribution of primary care provision, although privatisation does not seem to have increased the inequality in the access to, and the affordability, of health care. What seem to be paradoxical findings, incompatible with the current critique of the privatisation of social services and the emphasis on cost containment may be explained by the strong effect of the social context in which the doctor-patient encounter is taking place.

III.2 Recommendations for further research

Most of the critical discussion of the process of privatisation and cost containment has developed in Western Europe. In many of these countries the new needs and the revisions in the ideology of the welfare state have brought about policy reforms which have enhanced the privatisation of social services. Moreover, in all these countries, the starting point of these processes was a fairly well-developed welfare network, including medical insurance.

In China, however, publicly funded health services collapsed together with collective medical insurance. Such insurance programmes as medical cooperation systems are only recently beginning to be revived and develop and take shape. In view of the importance of the social context in the configuration of medical practice and charging behaviour, the effect of the different medical corporation systems on patterns of care provision is important and interesting.

Several questions come to mind. Will such a system really increase the affordability of health care? Will village doctors adjust their professional and charging behaviour to include diagnostic tests and treatment procedures that are covered by the medical cooperation in their county? Will a larger proportion of village doctors in private clinics charge for procedures for which they now tend to waive fees if these are not out-of-pocket fees? Will health expenditure and out-of-pocket health expenses increase?

A more general question is the nature of the effect of social context. The medical decision-making process and the ways in which decisions are made during the doctor-patient encounter are not completely clear. Most decisions made in primary care settings are made by the individual practitioner, away from administrative and/or professional control. Yet there is evidence that care providers tend to conform to both professional norms and administrative guidance.

The higher child mortality in villages with government-owned clinics also merits further attention. Causes of deaths were not recorded in this project, so that our data did not allow detailed examination of this finding. Many of these villages were located near a county hospital and it is possible that more traffic goes through them. If the higher mortality observed was indeed caused by traffic accidents, an educational programme should be implemented in schools, along with infrastructure work to promote road safety.

III.3 Practical applicability

Several findings in the data collected during this project have practical implications. The first concerns the need to update equipment in the village clinics. In this study, the availability of only five basic items was recorded. However, electric sterilisation equipment was available in less than one-third of the clinics. This finding is extremely important, since disposable syringes are not used in rural China, injections and infusions are performed on a regular basis, and some increase in the incidence of hepatitis has been recorded. In addition, an alarming proportion of private doctors do not have the means to perform a simple urine diagnostic test.

Secondly, the results stress the need to control cardiovascular risk factors. Preventive health at the individual level is gaining importance in the light of the increase in cardiovascular deaths. This can be achieved mainly through professional training and continuing education of village doctors, especially in private and collective settings, but it partly depends on the willingness of village doctors to take part in continuing education programmes.

Village doctors in private settings, a majority among the primary care providers, were less likely to participate in training programmes and refresher courses. Continuing education is believed to be crucial for maintaining high quality care in light of the rapid developments in medicine, particularly in diagnostic and treatment technology. Continuing education is exceedingly important to village doctors in collective and private clinics, whose professional training falls behind that of village doctors employed by the government. Health authorities should look for incentives to increase participation in such programmes.

The association between per capita income and the patterns of utilisation of health services among persons of working age should also concern the health authorities. As we have shown, household economic condition is positively associated with doctor visits in this age group. Neglect of what appears to be perceived as a minor health problem can develop into a chronic health condition and/or disability, not only later in life, but also during the productive stage of the life cycle. The former may have implications for the health care system of the elderly, the latter on productivity and work-loss days.

Inequality in the distribution of health services seems to be a problem which China shares with the rest of the world, developed or developing. According to the findings of this study, the village clinic distribution policy, currently based on population size, leaves small villages without a clinic and doubles the mean distance between farmers and the closest primary

care clinic. As we have said, small villages tend to be poorer and to be located farther from upper level facilities. Their health needs, however, appear to be greater, probably as a result of their economic conditions. Health authorities should be aware of these greater needs when applying the regulations covering the distribution of health services.

Our findings suggest that the primary/secondary care split, experienced in the Israeli health care system, may develop in China as well. As the figures were presented, there were no significant differences between the total incomes of village doctors practising under the three types of clinic ownership. In private clinics, however, only half of this total income was generated from medical practice. Given the similar time (weekly hours) invested in medical practice in the three settings, the observed difference in earnings probably reflects the differential charging policy (as we have shown) and differential prices (not studied). Whatever the mechanism at work, there is a danger that this inter-professional inequality will result in differential prestige, which will affect both the help-seeking behaviour of the consumers and the quality of health personnel drawn to primary care.

The Israeli experience shows that such inter-professional inequalities in earnings and prestige have led to a greater demand for secondary and tertiary health services and to a clear preference by patients to be treated by specialists who are employed in hospitals. This increased demand for secondary and tertiary health services raised health care system and out-of-pocket health expenditures.

With primary care being less prestigious and, until 1991, less well paid, the Israeli health services encountered major difficulties in recruiting doctors into the primary care services. Thus, almost half of the primary care providers are immigrants whose medical training is considered to fall behind the medical education in Israel and English-speaking countries.

IV. Recommendations

1. The great majority of the farmers (93.8%) in HeBei are satisfied or very satisfied with the current three-tier health system, which is organised in three layers, *i.e.* the county, township and village. This finding indicates that the system provides the basic medical treatment and meets the health care needs of the Chinese farmer. It is a successful system and there is no reason to change it. Therefore, China should maintain the basic principle of the three-tier health system and focus on improving the quality of service, even though some township hospitals have financial problems and some private village doctors do not have a formal medical education, etc.

2. In the rural areas, private doctors and doctors employed by a collective are the basic force or the grass-roots of the three-tier health care system, and are readily available to the farmers and accepted by them. Of the farmers interviewed, 35.9% preferred a private doctor and 33.3% a collective doctor. Thus, health authorities should be paying as much attention to the professional competence of these two types of doctors in the rural areas as that paid to doctors employed by the government, who are preferred by 26.1% of the interviewed farmers. The competence of the rural doctors in the villages will determine the quality of service at the primary level. The suggestion is that the relevant government official should establish some strict rules for the registration of rural doctors and provide them with regular mandatory training or refresher courses.

3. The rural health care is a very complex system. Its complexity stems from the variation in the characteristics of the population, the variety of health needs to be served, and the limited and declining ability of the hospitals to meet these needs. On the other hand, the health care resources in the rural area are relatively few compared with the urban area, so that it is most important to distinguish between the functions

performed by the private doctor, the collective doctor, and the government-employed doctor. This survey indicates that the private doctors are more competitive than collective and government doctors. They are located at a shorter distance from the patient, are more flexible (no time limits, make home visits, can sometimes delay payment, etc.) and charge less, because they are not dependent on income solely from medical activity. There is therefore a need to protect and encourage their enthusiasm as rural doctors, so that farmers do not have to leave their village if they suffer from a minor illness. The main function of the township hospital should be the implementation of preventive health care policy in the community rather than specialised medical treatment. The county-level government hospital needs to focus on severe and complicated health conditions, emergency treatment and diseases which cannot be cured at the primary level, as they require expensive equipment. The other function which government hospitals should take on is to run a continuous, rotating training programme for the village doctors.

4. An important task which faces the health department of the government is to enhance sanitation and health education for the farmers in order to improve awareness of the need for self-health protection. The survey indicated that quite a high proportion of the farmers are not aware that a disease should be treated as early as possible. Almost half (48.5%) of the respondents reported that they did not see a doctor when sick during the past year. The reason given by 66.2% of them was that they believed it was a minor disease for which there was no need to see doctor. We suggest that health education should start among children in the primary schools and take advantage of the mass media to promote health knowledge to the farmers according to the different seasons.

5. One of the most important tasks of the Chinese health care authorities in the rural area is to establish and expand the cooperative health care system so as to make it the basic health care system in rural China. If it is supplemented by a health insurance system, the health cooperative system can be combined with welfare and become a comprehensive mutual help system. This system will differ from other health insurance systems in that it will be a non-profit organisation rather than a business. The cooperative health care system can not only meet the basic health care needs of the farmers, but can also ease to some

extent the economic crises of individuals and families caused by illness. It also can promote the three-tier health care system in rural China by providing the financial resources for renewing equipment, technology and the training of health care personnel. This survey shows that the proportion of the villages which implement the cooperative health care system is relatively low: only 20.1% of the villages surveyed. This low proportion can be explained, firstly, by the lack of public awareness of the cooperative health care system. Secondly, the economic situation of individuals and villages constrains the development of the cooperative health care system. Finally, the specific coverage of a particular cooperative health care system is not attractive enough for the farmers to join. We therefore suggest that future research should focus on the cooperative health care system in rural China. Such research will not only benefit China, but may also be very important for other developing counties.

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Appendix I

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Appendix II

Follow-up of the project: capacity building and project-related publications

No formal workshops or research training programmes took place in the framework of this project. However, each working visit by Dr. Anson and Dr. Haanappel during 1995-1998 had training components. Research methods, research instruments and sampling theory were discussed and presented to the extended research team.

Publications:

Anson, O. and Haanappel, F.W. (1999). 'Remnants of feudalism? Health and utilization of health services of women in rural China', *Women and Health* 30 (1): 107-125.

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Other titles in the NIRP Research for Policy Series

1. Bird-David, N., Karugu, W., Oduol, M. and Wandibba, S. (2000). Technological change and rural third world women: an impact study in Machakos District, Eastern Kenya. ISBN 90 6832 662 7.
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