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Title of the work

ECONOMICS OF HEALTH CARE UTILISATION:

A STUDY OF HEALTH SEEKING PATTERNS IN COOCH BEHAR DISTRICT OF NORTH BENGAL

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one Statement of the Problem

1.1. Introduction

Historically utilisation of health facilities in India is very low. Though data on utilisation from private or other sources of care are either not available or reliable, according to Operation and Research Group (ORG 1987), level of utilisation of public health facilities in rural India was 37 per cent. National Health Policy-2002 states that the current level of utilisation of public health facilities is less than 20 per cent (GOI 2002). District level reports of Rapid Household Survey – Reproductive and Child Health Project (RHS-RCH) show, on an average, very low levels of utilisation of maternal and child health care services (MODE 1998, 1999). The reports as such also reveal very high degrees of inequalities in utilisation between rural and urban population. The Report of Inspiration (2002) on status of health in Cooch Behar districts states that in spite of high incidence rates of disease, a sizeable proportion of health seekers prefers quacks and primary level public health facilities. Important research questions at this point are that – why utilisation of public health facilities (or private also!) is so low? Or what are the main factors which affect utilisation of health care across cultures and societies in India? An enquiry into the fact would unveil some of the important alterations in health care delivery system as well as in pattern of utilisation of care. Some of them are – introduction of user fees or more specifically hike in fees structure in the public health facilities, emergence of numerous private sources of care, and revealed preference for alternative systems of medicine among rural and urban mass. The point is not clear whether demand for health facilities has affected for these changes or whether people's perception on illness has altered leading to a change in the appeal towards a particular type of care or system of medicine. These are some of the unanswered questions regarding health care utilisation in Indian context. All these developments lead us to rethink about the health seeking patterns in this era of neo-liberal economic policies of privatisation and globalisation. The present study will investigate such research questions empirically in the rural areas of Cooch Behar district of North Bengal.

1.2. Health care infrastructure and System of medicine in India

The public health care delivery system in India at present has a three-tier structure. The primary tier has been developed to provide health care services to the vast majority of rural people. It comprises three types of health care institutions: Sub-Centre (SC), Primary Health Centre (PHC) and Community Health Centre (CHC). SC is the first contact point between health workers and village community. PHC is the first contact point between village community and doctor. CHCs work as referral centres for PHCs (GOI 1997). The secondary tier, which is primary to the urban mass, includes medical care provided by the specialists at the district and sub-divisional hospitals. Tertiary health care encompasses sophisticated services provided by the super-specialists at medical colleges and specialised hospitals. Private sources of care are very uneven in both quantity and quality but their presence is parallel to the public health care system.

India has a rich, centuries-old heritage of medical and health sciences. However, over the centuries, with the intrusion of foreign influences and mingling of cultures, various systems of medicines evolved and have continued to be practiced widely. The allopathic system of medicine gained popularity under the British rule and made a major impact on the entire approach to health care in the country after Independence (GOI 1983). At present with the mainstream system of Allopathy five other systems of medicine such as Ayurveda, Unani, Siddha, Naturopathy and Yoga, and Homoeopathy are practiced officially (GOI 2002, Singh 2002).

1.3. Location of the problem in the theoretical context

Economists began to turn their attention to the matters concerning the efficiency in the health service sector around the end of the 1950s (Culyer 1971). Much of the controversies regarding application of economics to health care analysis waned when Fuchs (1966) defined health service sector as health care industry which provides different types of outputs such as medical services, hospitality or hotel services, and validation services to people utilising different inputs. These services are output of the health care industry measured in terms utilisation of health facilities, e.g., number of cases treated, hospital admission, etc. (Feldstein 1967a & Feldstein 1967b). The inputs of health care industry as categorised by Fuchs (1966) are: labour input (manpower), physical capital (plant and equipment), and intermediate goods and services (drugs, bandages, etc.). Empirical studies within this framework of supply side economics of health care began with the work of Feldstein (1967a). He opened new avenues of research by estimating Cobb-Douglas type production function of hospitals for the British

National Health Service. Studies in the demand side of health care economics also follow a similar framework, which considers a set of non-economic factors such as age, gender, education, culture, etc. with the economic ones (see Feldstein 1967b and Feldstein 1979). Utilisation of health services depends both on demand and supply of consumers and providers (Lee and Mills 1983). Studies on utilisation of health services fall under a mixed demand-supply framework.

However, the problem of health services utilisation should be analysed in an interdisciplinary framework as it has been dealt with not only by the economists but also by the anthropologists, demographers, doctors, geographers, sociologists and others. Among the geographers, Lefever (1926) was probably the first person to apply mechanical and mathematical tools to solve social problems regarding geographic location of some kind. Contemporary medical geographers have systematically studied how geographical accessibility to a health facility affect utilisation of health care. Since 1950s demographers have also started focusing on acceptance of different family planning methods and utilisation of maternal and child health care in connection with the so-called population explosion in the developing countries. Since 1970s, social and medical anthropologists also applied their mind to patients' perspectives and conceptions about illness and medicine to study how patients comply with the sick role – how they perceive the causes of their condition and make choices regarding the use or non-use of different kinds of health care (Herzlich and Pierret 1985). Within this sphere of research, conceptual frameworks have been developed to put some order into the mass of possible interacting variables which affect health services utilisation.

1.4. Objectives

The main objective of this paper is to investigate how different socio-economic, demographic, and other factors contribute to the probability of utilising health care and make it a successful event, and analyse respondents' opinion towards different systems of medicine. The specific aims of this paper are, however, to examine whether:

i) Health seeking pattern is independent of the characteristics of the subject,
ii) Utilisation of health services conforms according to the characteristics of the disorder,
iii) Characteristics of the service have less bearing on the problem of health care utilisation.

two Review of literature

The number of factors which affect health services utilisation has been classified by different schools or persons in different ways. Among the economists, Martin S. Feldstein (1967a) began his work with one set of explanatory variables: availability factors. In his planning model, he included demographic characteristics, income, cost, etc. Another noted economist, Paul J. Feldstein (1979) included the factors like incidence of illness, cultural-demographic characteristics with the economic ones. Sociologists and anthropologists on the other hand have presented a very elaborated and systematic classification of the explanatory variables. Though it seems that their models are biased to qualitative anthropological techniques, importance of economic and other factors and scope for applying econometric tools and techniques in those models have not been ignored. In the present study we have decided to follow a framework which has been modified after Koreger (1983) where a broad categorisation of factors include the following:

- Need factors (characteristics of the disorder and their perception),
- Predisposing factors (characteristics of the subject), and
- Enabling factors (characteristics of the service).

2.1. Need factors

Type, stage and intensity of illness, number of spells, duration of illness episode, identification of the disease, and aetiological considerations affect utilisation of health care services. Higher the severity or number of spells or longer the illness episode the higher the degree of utilisation of services. Table 1 presents findings of studies in this category in very brief.

Table 1. Characteristics of disorder and their perception

[Stage and intensity of illness: 1, Number of spells: 2, Duration of illness episode: 3, Identification of the disease: 4] ⇒ Utilisation of services						
Author	Year	Place	Findings			
			1	2	3	4
Pathak et al.	1981	Nagpur, India	√	-	-	-
Sauerborn et al.	1989	Africa	√	-	-	-
Sodani	1997	Rajasthan, India	-	-	√	-
Dunlop et al.	2000	Canada	-	√	-	√

√: The issue is addressed, - : otherwise

2.2. Predisposing factors

Predisposing factors are those, which are supposed to make an individual susceptible towards a specific action or behaviour or experience. Different factors in this category are:

- Family characteristics (age, gender, household size, marital status)
- Social Structure (education, employment, ethnicity)
- Culture
- Assets / Affordability (land, livestock, cash income)

2.2.1. Family characteristics

Though illness is an unexpected occurrence or a random event, it has a fair degree of predictability with respect to demographic factors like age, gender, family size, marital status etc. As the need for health care changes with age, gender, and marital status utilisation of services also conforms accordingly. Size of a household may work positively or negatively. In a large family per capita income may be less and so also ability to pay for health care. It may reduce chances of utilising a care from modern source. On the contrary in larger families interaction among the members or with the neighbours may be more intensive and which may increase chances of utilising a care. Table 2 shows glimpses of studies in this category.

Table 2. Family characteristics

[Age: 1, Gender: 2, Household size: 3, Marital status: 4] ⇒ Utilisation of services						
Author	Year	Place	Findings			
			1	2	3	4
Feldstein	1979	Canada*	√	√	√	√
Pathak et al.	1981	Nagpur, India	√	-	-	-
Kroeger	1983	Germany*	√	-	√	-
Yesudian	1989	Madras, India	-	-	√	-
Faizi	1996	Bihar, India	√	-	-	-
Sodani	1997	Rajasthan, India	√	-	-	-

√: The issue is addressed, - : otherwise, * Conceptual studies

2.2.2. Social Structure

Impact of education, employment and ethnicity towards utilisation of services is universally acceptable. Volume of studies in this category is quite large. Important studies are shown below.

Table 3. Social structure

[Education: 1, employment: 2, ethnicity: 3] ⇒ Utilisation of services					
Author	Year	Place	Findings		
			1	2	3
Pathak et al.	1981	Nagpur, India	√	√	-
Abu-Zeid, and Dann	1985	Africa	√	-	-
Garg	1985	India	√	-	-
Amin et al.	1989	Bangladesh	√	√	-
Elo	1992	Peru	√	-	-
Becker et al.	1993	Philippines	√	-	-
Trakroo	1993	Merut, India	-	-	√
Gobindasamy and Ramesh	1997	India	√	-	-
Kavitha and Audinarayana	1997	Tamil Nadu, India	√	-	√
Celik and Hotchkiss	2000	Turkey	√	-	√
Dunlop et al.	2000	Canada	√	-	-
Matsumura and Gubhaju	2001	Nepal	√	√	-

√: The issue is addressed, - : otherwise

2.2.3. Culture

Basu (1990) has done one longitudinal study with focus on cultural background as a variable affecting the level and kind of utilisation of existing health care services in Delhi. The study has been conducted in a resettlement slum in Delhi during 1985-86 taking two groups of population with two different cultural backgrounds. One group has origin in Eastern Uttar Pradesh and another group has in Tamil Nadu. The hypothesis has been that cultural or regional identity has an important bearing on

the knowledge, attitudes and practices relevant to the use of health care facilities. The study found that important cultural differences exist in the medical services sought for childbirth and in the treatment of morbidity in children of different ages and sexes.

2.2.4. Affordability

A very few studies have examined the relationship between family income or wealth and utilisation of health care. Studies on health care expenditure, in general, found that income elasticity of demand is less than one. In India findings are mixed. Sometime the coefficients of income or other indicators of affordability like number of living rooms are positive and sometimes negative. Positive signs convey the affordability of the household. Affluent households spend more on health. The negative signs indicate that economically better placed households spend more on good health habits and also take early care of the ill persons, therefore the expenditure on illness gets decreased. Important studies are shown below:

Table 4. Assets / Affordability (Land, Livestock, Cash Income)

Assets / Affordability (land, livestock, cash income) ⇒ Utilisation of services			
Author	Year	Place	Findings
Feldstein	1979	Canada*	Income elasticity of demand is less than one
Abu-Zeid, and Dann	1985	Africa	Positive relationship
Sodani	1997	India	Mixed results
Celik and Hotchkiss	2000	Turkey	Positive relation with having a car, flush toilet and modern floor
Dunlop et al.	2000	Canada	Positive relationship

* Conceptual study

2.3. Enabling factors

- Availability of health facilities
- Accessibility to health care
- Appeal (opinion and attitudes towards traditional and modern healers)
- Quality of care
- Costs

2.3.1. Availability of health facilities

Feldstein (1967a) explained variations in utilisation of services by availability factors estimating Cobb-Douglas production functions of hospitals under British National Health Service. For all the production functions he found that elasticity coefficients of medical inputs, beds, drugs and dressings are positive. It means that hospital output increases with respect to changes in inputs. However, all the production functions show decreasing returns to scale, meaning that output would increase proportionately less than the increases in input. Feldstein (1967b) also developed a 'complete-system of econometric models' to observe conveniently how the health care system responds to differences in bed availability, demographic characteristics, income, etc.

Planning Commission, Government of India (1999) has found that total number of doctors in a CHC (Coefficient: 0.46) and percentage of specialists present in CHC (Coefficient: 0.06) are positively related with utilisation rate of CHC services.

Majumder and Upadhyay (2002) considered three availability factors: availability of medical personnel, paramedical staff, and bed per thirty thousand population in rural areas. In their log-linear model elasticity coefficients of the first two factors came to be positive and significant. Elasticity coefficient of paramedical stuff was higher than that of the medical personnel. This means that paramedical staff are easily available and get good hold of rural mass. Other important studies in this category are shown in the following table.

Table 5. Availability of health facilities

Availability of health facilities (medical and paramedical stuff, plant and equipments, beds, drugs and bandages, etc.) ⇒ Utilisation of services			
Author	Year	Place	Findings
Cuttani	1976	India	Positive relationship
Frost and Francis	1979	U. K.	Elasticity of bed is not significantly different from one
Amin et al.	1989	Bangladesh	Availability of drugs increases utilisation in public health facilities
Sauerborn et al.	1989	Africa	Availability of drugs is an important service related determinant
Vogel and Stephens	1989	Africa	Availability of pharmaceuticals is important

2.3.2. Accessibility to health care

Increased distance between residents and health care providers is commonly thought to decrease the utilisation of health care. Major findings in this category are as follows.

Table 6. Accessibility to health care

Accessibility to health care ⇒ Utilisation of services			
Author	Year	Place	Findings
Rao et al.	1972	India	Introduction of public transport is positively related
Ramachandran and Shastri	1983	Karnataka, India	No significant relationship with distance traveled
Freeman et al.	1983	Africa	Inverse relationship
Airey	1989	Africa	Utilisation declines at a rate of about 2 % per kilometers (negative relationship)
Rao and Richard	1989	India	Distance from town is an important factor
Government of India (GOI)	1999	India	Area coverage of a CHC and mean distance between PHCs and CHCs are negatively related with utilisation
Sodani	1999	India	Positive relationship
Mooney et al.	2000	U. S. A.	Distance-decay relationship up to 15 miles

However, recent theoretical developments in the geography of health set the stage to discuss a more nuanced relationship between distance and health care utilisation. Nemet and Baily (2000) think that the implication that human behaviour is recursively bound up with how individuals use places and derive meaning from these interactions. Distance then may take different meaning to different individuals. It is important to consider how population 'construct' the barrier effects of distance in experience of rural life. They have operationalised the idea by working out activity space for each individual. In order to do that they have considered trips to groceries, etc. and followed the method developed by Lefever (1926) to sketch standard deviational ellipse. The study found statistically significant association between utilisation and location of physician relative to activity space. They have concluded that variation in utilisation rates seems more closely linked to a broader web of spatial relations – the activities of daily life—than any marker (distance).

2.3.3. Opinion and attitudes towards traditional and modern healers

Individual preference or appeal towards a particular type of care or system of medicine is important determinant of utilisation of health services. Each system of medicine represents more or less a distinct stage in the development of healing art in the progress of human civilisation. In India various systems of medicine run parallel. Though ultimate aim of individual is healing of

disease or alleviating the pain, human behaviour in illness and their acceptance of mode of treatment varies (Srivastava 1976). Table 7 summarises important findings in this category.

Table 7. Appeal (opinion and attitudes towards traditional and modern healers)

Appeal (opinion and attitudes towards traditional and modern healers)			
Author	Year	Place	Findings
Reddy	1966	India	ISM has profound hold on villagers socially and psychologically.
Kakar et al.	1972	Punjab, India	Indigenous practitioners dominate because they provide medicines (drugs) according to local customs, beliefs, and demand.
Rao	1972	India	Thriving of ISM is due to the non-availability of modern medicine.
Srivastava and Bhandari	1975	Delhi, India	The reasons for choosing Ayurvedic system were 'lasting cure', 'no ill effects', 'more effective', and 'tried Allopathy earlier'.
Chopra	1980	India	Allopathy is popular as it gives faster relief and also had greater efficacy in cure of most diseases. People often resorted to a combination of system of medicine.
Hans	1980	Aligarh, India	The reasons for preferring Ayurvedic system were 'slow but lasting cure', 'faith in the system', 'no side reaction', and 'inexpensive medicines', effective for children. Reasons for choosing Homoeopathy were also similar.
Nandan et al.	1982	Agra, India	Majority of people relied on traditional practitioners. Modern medicine was less in vogue due to high cost and technology and less numbers of practitioners.
Chopra	1991	Delhi, India	Beneficiaries were not aware that maternal and child health services can be obtained from doctors in ISM & H also.
Dar	1995	Delhi, India	Adolescent male preferred private clinic.
Sundar	1995	India	Utilisation of private health facilities is highest for acute illness and that of public health facilities is very high for accidents and injuries.
Chhabra and Saraf	1997	India	In a tertiary level facility (reproductive health care seekers) illiterate people seek care for economic reasons, rich people for referral cases, reputation, availability of desired expertise, appropriate health care insurance benefit, etc.

ISM & H: Indian System of Medicine and Homoeopathy

2.3.4. Quality of care

The notion of quality of care, which has been characterised as a social construct, takes different meaning. These meanings vary across professionals, managers, governments, users, among others and in relation to the type of care under consideration as well as to the social and technological context in which the care is delivered. Among these approaches, the analysis of user perception of quality offers a useful complement to those evaluations conducted from the point of view of professionals or public health authorities (Haddad et al. 1998). Table 8 shows the factors (concerned areas) which affect utilisation of services.

Table 8. Quality of care

Quality of care ⇒ Utilisation of services			
Author	Year	Place	Findings
Dhar	1979	India	Important factors are: general cleanliness, that of linen and improving water supply in bathrooms.
Donabedian	1980	U. S. A.	Doctor-patient relationship is important
UNFPA	1995	U. S. A.	Four points are: provider-client information exchange, provider competence, interpersonal relations, and mechanisms to encourage continuity of medical care.
Boscarino	1996	U. S. A.	There might be positive and negative biases associated with patient's perceptions.
Schoenbaum	1998	U. K.	Art of medicine is equally important as the science of it.
Qatari and Haran	1999	Saudi Arabia	Waiting area structure, confidentiality measures and environmental structure were the areas that caused more concern to service users.

2.3.5. Costs of Care

The price of a service and use of that service are, according to economic theory, inversely related: as price is reduced, purchase or use of the service will increase. Knowledge of price elasticity of demand for medical services is, therefore, of great importance. Cost of a care is divided it into three parts: the reduction in market income caused by disease, the reduction in longevity caused by disease, and the reduction in psychological well being caused by disease, often labelled 'pain and suffering,' even when there is no reduction in market income. The reduction in market income has at least four sub-components: the cost of medical treatment, the loss of labour market income from a episode of illness, the loss of adult earning power from episodes of disease in childhood, and the loss of future earnings from premature mortality (WHO 2001). Studies, in general, take the following components: doctors fee, hospital admission fee, cost of drug, cost of medical test, cost of surgery as direct

cost and cost of special diet, cost of transport, tips, rituals, monetary loss of earnings to patient due to illness and loss of earnings to accompanying persons for providing support as indirect cost (see Weisbord 1960, Vinni 1983, Sodani 1997). However, the effect of price or costs towards utilisation of health services has not been explored so much in developed and in developing countries because of the complexity of the concept in health care. In many developed countries, part or the entire price is paid by the third party payer or by the government on patient's behalf. Any estimate of price elasticity of demand should be based upon the net or out-of-pocket price paid by the patient. Insurance coverage represents a movement down the patient's demand curve, which increases the quantity of services demanded. Health insurance may have positive impact on utilisation but elasticity of demand for health care with respect to health insurance does not confront to the price elasticity of demand (Feldstein 1979). Many African nations have adopted the recommendation of the World Bank on increased cost recovery for financing publicly provided health services and gradually introducing user fees (Shaw 1995). However, utilisation dropped in many instances after user fees were introduced. When quality improvements were coupled with the introduction of user fees, utilisation increased after fees were raised (Reerink and Sauerborn 1996).

Studies on impact of cost or user fees on utilisation are sparse at national level and also of the studies that has been done, the findings are mixed. Many experts in medical care have generally assumed that prices affect medical service use very little (Yoder 1989). Yoder have presented seven different studies in health demand and utilisation in developing countries at sub-national level and come to the conclusion that in general the price of services does not matter, having a minimal (if any) effect on the decision to seek health care. In the Philippines and Malaysia, it was found that price had a minimal effect on the demand for health services. In Kenya, however, it was found that cash price is a deterrent to health care use. In another study in Mali it was found that price elasticity of demand is –0.017, which suggests that there would be little or no change in the expenditure pattern as a result in changes in price, holding other things constant.

Yoder (1989) has also presented results of his study conducted in Swaziland where he has shown that price is well sensitive to utilisation of care.

Freeman et al. in Calabar, Nigeria (1983), Sauerborn et al. in Burkina Faso (1989), Celik and Hotchkiss in Turkey (2000) found respectively that cost of travel; cost of travel and drugs; health insurance were important service related determinants.

2.4. Research gaps and scope for further research

Important research gaps and scope for further research are highlighted as follows.

2.4.1. Dichotomy between economic and non-economic factors

There has been a dichotomised classification of the factors as economic ones and non-economic ones. Economists were of the opinion that economic factors only are relevant instruments of public policy and have more immediate value for forecasting. Non-economic factors are also important but less useful for policy purposes as they are not subject to sudden change (Feldstein 1979). Social scientists who belong to the other group have greatly acknowledged importance of economic as well as non-economic factors to understand the problem of low level of health services utilisation. If we closely look at the studies based on the former view, we can see that mostly those were conducted in developed countries with the assumption (or consideration) that there is only one system of medicine, namely Allopathy in a very well organised set-up. In India six different systems of medicine run parallel with many other unrecognised traditional ones. However, the dichotomy between economic view and non-economic one may led us to test whether non-economic factors are important predictor of utilisation of services and policy related instruments in Indian societies.

2.4.2. Technical and non-technical studies

Studies on health services utilisation, as reviewed in the present study, may again be classified into two broad categories. We may call one group as 'technical' to accommodate conceptual studies and those based on mathematical or econometric models. The other may be called 'non-technical' for all descriptive studies and those based on simple statistical comparisons. Though the present review of literature may not be exhaustive, if we look at the volume of technical studies across regions, we can see that majority of them were conducted either in developed nations or in Africa. If we count the number of non-technical studies we can see that most of them were conducted in India. Although the shortfall in technical studies in India calls for immediate action, we should find some other valid reasons to do that. As the developed and developing African nations have already gained experience from empirical studies, the question at this stage is that whether the results can readily be implemented in Indian context or whether we should expedite to follow a similar path. Peters et al. (2002) put a note of caution that experience gained from the latest policy changes in North America and Western Europe cannot

be simply adopted in India whose demographic and institutional realities are so different from those of high-income countries. We feel that localisation of global concepts would provide us with meaningful and reliable apparatus for a deeper insight into the problems. For example, we have mentioned earlier that many African nations have already introduced user fees in public health facilities or gradually introducing it. As a consequence of it technical studies on utilisation gained importance in Africa to examine the effect of cost and other relevant factors on utilisation of care. In India too the need for charging user fees is being greatly acknowledged. In some States including West Bengal fees structure in secondary and tertiary levels has been revised. However, we are unaware of any effort in our country (if any) in pre-reform period or in the recent past, which addressed the issue.

2.4.3. Efficacy of technical and non-technical studies

Feldstein (1967b) projected the view that crude statistical comparison of means, etc. is less useful for planning purposes. He advocated a 'complete-system of econometric models', which would answer the question -- how do differences in variable x affect some other variable(s) in the health care system? Very few studies in India meet Feldstein's proposition.

2.4.4. Gaps in technical studies in India

Adverting to technical studies in India we see that Sodani (1997, 1999) estimated demand functions for a region in Rajasthan for all types of illness considering 11 independent variables from different categories. The dependent variable in that study is total expenditure (direct and indirect costs) on health care per patient. However, as the sources of seeking care (or systems of medicine) are not homogenous in nature and cost of a treatment varies according to sources of care and system of medicine, in strict sense the estimated demand functions are not likely to reflect true picture. We feel that demand functions should be estimated according to type of care or system of medicine. Other technical studies (mainly by demographers) such as Gobindasamy and Ramesh (1997), Kavitha and Audinarayana (1997), considered maternal and child health related issues. Basu (1990) addressed the issue of culture only. GOI (1999) evaluated the functioning of the CHCs incorporating availability and geographic factors only. Moreover, none of the technical studies in India examined the effect of cost or price on the pattern of health care utilisation. Except Sodani (1997, 1999), others have not incorporated affordability factors also in their study. Large-scale sample surveys in recent past, such as Rapid Household Survey -

Reproductive and Child Health Project, National Family Health Survey – II have included some questions on type of house, toilet facility, source of drinking water, type of fuel used for cooking and lighting, household consumer durables, etc., to compute a index of quality of life. However, coefficient of this type of index in no way reflects income elasticity of demand for medical care, as many of the above factors are independent of a household income.

If we look at the sampling design of the study done by Inspiration (2002) in Cooch Behar, we find that 60 villages have been covered in the district and 10 households have been selected from each village. Of the 10 households 7 have been selected purposively such that each has at least one infant, 1 household has been selected purposively such that it has one adolescent. Rest 2 households have been selected randomly. In such a sampling design the possibilities of biases cannot be ruled out. Moreover, as the study used 1-year recall period, it has aggravated the chances of misreporting.

2.4.5. Hospital records Vs Patients' perception

The framework developed by Feldstein (1967a, 1967b) is fully and the study by GOI (1999) is partially based on hospital records. As 'patient's illness' does not coincide with the 'doctor's disease' (Herzlich and Pierret 1985), inferences of those studies are likely to lose credibility in mixed socio-economic and cultural set up.

2.4.6. Activity space Vs simple geographical accessorily

Nemet and Baily (2000) introduced a new concept of 'activity space' of a potential patient over the simple geographical accessibility to health care. The concept can hopefully be used in Indian contest after appropriate localisation of it as 'normal out-of-door trips' (to market place, nearest towns, etc.) in the present socio-economic set-up. Moreover, simple geographical distance may be meaning less for studies based on small sample size or small geographical area either because of respondent's inability to measure the distance or because of his or her ignorance about the availability of some facility or simply because of common sources or care for all. Incorporation of the concept of activity space may however, minimize all these shortcomings.

2.4.7. Aetiology and patients' cognitive structure

Importance of aetiological considerations and appeal towards a type of care or system of medicine has been recognised greatly by the medical sociologists, anthropologists, and doctors. In India the issue has been addressed mostly by the medical specialists while pursuing their post-

graduate degree in social and community medicine. Studies on these issues are restricted in counting frequencies of patients expressing various opinions. However, to move a step further one can use modern qualitative anthropological techniques to sketch patients' cognitive structure with respect to their choice of a type of care or system of medicine. Though there is no appropriate masterpiece or model to follow, the work of Verma et al. (2001) on male sexual health problems in a slum population in Mumbai may be helpful in this regard. The authors have used various anthropological techniques to get culturally relevant items (vocabulary), to delineate the boundaries of a semantic or cultural domain, and also to make inferences about respondents' cognitive structure by computing 'salience' or importance of a particular opinion from the order of recall and the frequency of recall.

However, it is to be mentioned that salience has been computed (in the above study) combining the frequency of an item with its average rank in individual lists. Methodological question is that, whether the process of computing average rank is a valid action. Each individual list expresses one preference ordering where items are in ordinal scale. Characters in ordinal scale have identity and order only. They are not additive. So, computation of average rank is a meaningless operation. And so also any measure based on it. In such a situation it is necessary to develop a method which will be free from such shortcomings.

2.4.8. Harmonising quantitative and qualitative approaches

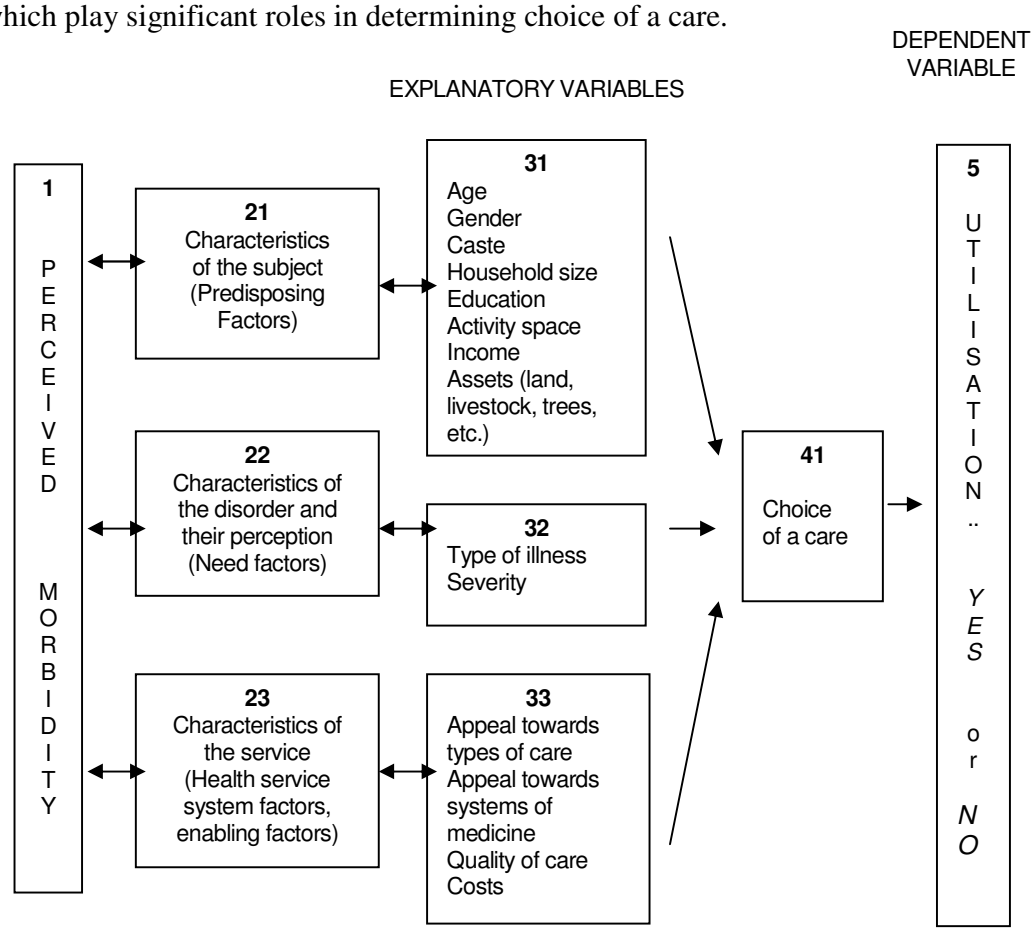
One disadvantage of quantitative studies is that though they tell very preciously about 'what' or 'how much', they do not explain 'why'. Usually researchers try to find the clue (of 'why') from out side the models or studies. As a part of positive body of thought, though econometric models provide value-free predictions, their meaningful interpretations very often incorporate prejudice or some sort of imagination of the researchers. If a study is designed to have both quantitative and qualitative sections, the former will give reliable estimates on 'what' and 'how much' and the latter will explain 'why'. One section will be true complement of the other.

In the present paper households' opinion have been analysed with respect to system of medicine only.

three Conceptual framework

3.1. Conceptual framework

The conceptual framework for the study is presented below. It has been modified after Kroeger (1983). Each node has been provided with a number according to vertical and horizontal position. The first node stands for perceived morbidity, which interacts with predisposing, need, and enabling factors. Nodes in the third panel display a set of possible explanatory variables, which play significant roles in determining choice of a care.



four IV Research design and method

4.1. Sampling design

4.1.1. Sample size

Determination of sample size depends on a number of technical and non-technical factors. Non-technical factors are: time and resources available for the study, geographical considerations, etc. Technical factors include objective of the study, type of model to be fitted, proportion of cases having the characteristics (under study) in the population, level of margin at which the study is designed. The level of margin for the present study is 0.05 (i.e. α=0.05). The pilot study revealed that the average period prevalence rate of disease for the district is 0.348 (without multiplying 1000. The average size of a household in rural area of the district is 5.455 (according to 1991 Census). If 'n' is the size of a sample, P = 0.348, and Q = (1-P) = (1-0.348) = 0.652 then $n = Q / (P*\alpha^2) = 0.652 / (0.348*0.0025) \approx 749$ person or 749 / 5.455 ≈ 140 households.

It has been decided to select 20 households from each mouza / village. This leads us to select 140/20 = 7 mouzas / villages in rural area of Cooch Behar. In order to consider non-response, etc., over sampling of 10 per cent is done. In other words, 20 + 2 = 22 households have been selected from each mouza / village leading to a total of 154 households.

The study adopts a multistage sampling technique and selects households through simple systematic sampling technique.

4.2. Tools and techniques of data collection & Questionnaire

Data has been collected through interview technique (roughly for a 5-months reference period) with mostly a structured and close-ended questionnaire. In one section of the questionnaire qualitative information has been collected adopting free listing technique.

The questionnaire has 13 sections: Identification, Household Characteristics, Background Characteristics of the Household Population, Economic Profile, Morbidity, Vital Events, Utilisation of Care, Reasons Behind Choosing a Particular Type Care / System of Medicine, Availability of

Health Facilities, Accessibility to Health Care & Activity Set, Quality of Care, Expenditure, Food Habit.

Data on morbidity have been classified into three groups according to Global Burden of Disease Study 1990 (Salomon and Murray 2002). Group I consists of communicable, maternal, perinatal, and nutritional diseases. Group II and Group III include noncommunicable diseases and injuries respectively.

4.3. Data processing

4.3.2. Study of household's choice of a system of medicine

Information in this category have been collected adopting free listing technique, where respondents are free to express their opinion according to importance in ascending or descending order. Computation of importance or salience is based on the following assumptions:

- Each individual list is exhaustive.
- Importance of different items to the respondent declines linearly as rank increases.
- The attribute, importance can be converted into positive integers which are in interval scale.

As the importance declines linearly, if we assign numbers 1, 2, 3, … etc. to each item in a list then importance of one particular item will be its corresponding assigned integer divided by total sum of all positive integers in the list. If one item is present in n-number of lists, average importance for the item will be ∑ (importance) / n. Salience of each item will then be (average importance of item i)/ ∑ (average importance) such that ∑ (salience) = 1.

4.3.3. Factors affecting utilisation of services

As our dependent variable (utilisation) is dichotomous (i.e., binary, takes value either 0 or 1) we will estimate the following multivariate logit model:

$$\text{Logit P} = \beta_0 + \sum \beta_{1i} X_{1i} + \sum \beta_{2i} X_{2i} + \sum \beta_{3i} X_{3i} \ .$$

The equation includes need (X_{1i}), predisposing (X_{2i}), and enabling factors (X_{2i}).

4.4. Definition of the variables

Table 9. Variables in the model and definitions

Variable	Type	Definition	Value
Utilisation	Categorical	Whether the household seeks care from any modern source	1 if the event has occurred 0 Otherwise
Age	Categorical	Age of the morbid person	1 if age 5-14 0 otherwise; 1 if age 15+ 0 otherwise
Gender	Categorical	Gender of the morbid person	1 if female 0 otherwise
Caste	Categorical	Caste of the morbid person	1 if general 0 otherwise (Schedule caste/ tribe)
Family size	Categorical	Number of persons in the household	1 if size <= 5 0 if size > 5
Education	Categorical	Education of the head of the household	1 for illiterate and up to primary 0 for middle and above
Short activity space	Numeric	Number of travels by the head of the household with 10 kms range in a month	Continuous
Long activity space	Numeric	Number of travels by the head of the household beyond 500 kms range in past three years	Continuous
Standard of living	Numeric	Number of living rooms + type of toilet facility (sanitary/other) + audio system (yes/no) + TV (yes/no) + bicycle (yes/no) + bike (yes/no)	Continuous
Primary affordability	Numeric	Size of holding + number of milch animals + number of draft animals + number of birds + number of fruit trees	Continuous
Income	Numeric	Household monthly income from all sources	Continuous
Type of illness	Categorical	Morbidity	1 for Group I 0 for Groups II & III
Severity	Categorical	How sever the attack is	1 for medium 0 otherwise; 1 for high 0 otherwise

Type of facility	Categorical	Public/private/other	1 for public 0 otherwise
System of medicine	Categorical	Allopathy/Homeopathy/other	1 Allopathy 0 otherwise; 1 for Homeopathy 0 Otherwise
Quality of care	Categorical	Composite index on households opinion on cleanliness (yes/no), whether privacy is maintained (yes/no), service provider listen to the patient/other (yes/no), service provider talk to the patient/other (yes/no), and the household is satisfied	1 for medium 0 otherwise; 1 for high 0 otherwise
Costs	Numeric	Total direct cost per episode	Continuous

five V Results and discussion

5.1. Characteristics of the subject

There are 140 households with 755 persons. Out of these 140 households 94 have experienced any type of illness during the 5-month reference period and total number of illness came out to be 172 (= n for the present analysis). If we analyse data according to illness episode, then out of these 172 cases, 26 has been in the 0-4 age group, 41 in the 5-14 age group, and the remaining 105 cases in the 15+ age group. Both females and males suffer almost equally as the figures have been 91 and 81 respectively. Percentage of schedule caste and tribe population seems to be low in the sample. The corresponding figures are 65 and 107 for schedule caste and tribe, and general category. As of family size, 83 cases are in small families and the remaining 89 cases in large families. Similarly 69 cases have been experienced by persons whose household head are illiterate or primarily educated, in remaining 103 cases head of the households are educated up to middle or above. Household income varies from Rs. 600 to Rs. 6500, and the average household income is Rs. 2524.47.

5.2. Characteristics of the disorder

Out of 172 cases 117 cases received treatment from any modern source and for the remaining 55 cases households have not utilised any care or did self or family treatment or have gone to traditional healers.

The above morbidity statistics can be used to compute period prevalence rate of morbidity (see Hill 1966) and which has to be 0.554. It roughly conveys that 1 in every 10 persons fall ill monthly in the rural area of Cooch Behar.

Type of illness is biased to the first category. There are 95 cases in the first category and the remaining 77 cases in the second and third category.

If we look at severity, among the cases, 70 belong to the high, 73 belong to medium, and 29 belong to low categories.

5.3. Characteristics of the service

Out of 172 cases 49 cases have been treated in public health facilities and 123 cases in private type or other health facilities. Preference for Allopathic system of medicine dominates the same of others. 102 cases have been treated under Allopathic system of medicine, 41 under Homeopathy, and 29 under other systems of medicine. Direct cost of treatment varies from Rs. 5 to Rs. 2767, and household wise average direct cost per episode is Rs. 203.90.

5.4. Results of multivariate analysis

Table 10. Results of multivariate analysis

Explanatory variables	B	S.E.	Wald	df	Sig.	Exp (B)
Young age group (5-14)	-2.383	1.320	3.259	1	.071	.092
Older age group (15 and above)	.652	1.105	.348	1	.555	1.920
Gender	.148	.949	.024	1	.876	1.159
Caste	.141	.900	.025	1	.875	1.152
Family size	2.047	.989	4.282	1	.039	7.747
Education of head of household	1.079	1.174	.844	1	.358	2.941
Short activity space	.698	.231	9.096	1	.003	2.009
Long activity space	.568	.585	.943	1	.331	1.764
Standard of living index	.924	.450	4.222	1	.040	2.519
Primary affordability	.026	.075	.120	1	.729	1.026
Income	.001	.000	3.366	1	.067	1.001
Type of illness	.830	.847	.961	1	.327	2.294
Medium severity	-.758	1.157	.429	1	.513	.469
High severity	2.583	1.201	4.625	1	.032	13.240
Allopathy	4.781	1.798	7.068	1	.008	119.184
Homeopathy	5.274	1.867	7.981	1	.005	195.222
Type of facility	4.284	1.501	8.144	1	.004	72.555
Medium quality of care	-1.431	1.391	1.058	1	.304	.239
High quality of care	-3.682	2.069	3.167	1	.075	.025
Cost per episode in a household	.001	.001	.837	1	.360	1.001
Constant	-14.328	4.116	12.120	1	.000	.000

Number of episode, n = 172 in 94 households

5.4.1. Characteristics of the Subject

Table 10 shows results of multivariate analysis. There are three types of explanatory variables as per classifications shown in the conceptual framework (in section III). The coefficient of young age group is negative (-2.383). It tells that as compared to the 0-4 age group, controlling other variables, the effect of the 5-14 age group towards utilisation of services is negative. The log

odds or logit of P decreases by 2.383. The final column of the table displays odd ratios, interpretations of which are straightforward. The odds ratio of the young age group is 0.092. It conveys that a change in age group from 0-4 to 5-14, holding other variables constant (henceforth we will not mention it), multiplies the odds by 0.092 (a 90.8 per cent decrease). This effect of young age group, as compared to the 0-4 age group, is statistically significant at 0.10 level. Similarly, a change in age group from 0-4 to 15+, multiplies the odds by 1.92 (a 92 per cent increase). For this effect, the Wald statistic is not statistically significant. However, it can be said that morbid cases in the 5-14 age group in rural Cooch Behar, are less likely to receive care from any modern source.

Coefficients of gender and caste show that chances of utilising a care from modern source are higher for females and patients belong to general caste respectively. However, results are not statistically significant.

The odds ratio of family size tells that in small families (<=5) chances of utilisation is much higher than in large families (> 5) as the odds increases by more than 7 times when the value for the category changes from 0 to 1.

Though statistically insignificant, the odds ratio of education of the head of the household says that illiterate and primarily educated heads are likely to utilise a care more from modern source.

Persons' normal out of door trips and long distance travels also contribute to the probability of utilising a care from modern source. Household heads who visit frequently places within 10 kilometres range are likely to utilise care more. Technically, when number of visits increases by 1, odds of utilisation increases by 100 per cent. The coefficients of long distance travels also convey similar meaning, but those are not statistically significant.

There are three indicators representing affordability of a household. The first one is the standard of living index. The odds of utilisation increases by 152 per cent when standard of living increases by 1 unit. The index which is made of assets or variables close to agriculture and hence which is termed as primary affordability has no significant impact on utilisation. The most important thing is that income remains neutral and this neutrality is statistically significant.

5.4.2. Characteristics of the disorder

Infectious diseases are likely to be treated more in modern facilities than other diseases. As compared to low severity, cases with high severity increase the chances of utilisation of modern care by more than 13 times.

5.4.3. Characteristics of the service

Odds of utilisation increases tremendously when the preference for system of medicine shifts from traditional and other to Homeopathy. The same is true for Allopathy also, but its impact is relatively lower than that of Homeopathy. Similarly, preference for public health facility is significantly and positively associated with utilisation.

Quality of care is negatively associated with utilisation of modern care. Odds ratios of both the medium and high quality of care show that odds of utilisation decreases drastically when the categorical values change from 0 to 1.

Interestingly, the coefficients of cost per episode remain neutral as in case of income. This information will be very useful for policy prescriptions.

5.5. Households' preference for a system of medicine

5.5.1. Preference for Allopathy

Table 11. Preference towards Allopathic System of medicine

Reasons	Freq	Salience
In old age Allopathy is effective	1	0.153
Tried Kabiraji (traditional) earlier, tried homeopathy earlier	2	0.112
Quick relief, instant relief	3	0.094
For infectious disease Allopathy is good	1	0.092
Effective, permanent relief	2	0.090
Good treatment	1	0.082
If need saline can be given	1	0.061
Qualified doctors are available	1	0.061
Reliable, less tension	3	0.055
When my son goes to market place, brings drugs for me	1	0.051
Chances of better treatment in nursing homes	1	0.044
Scientific	1	0.041
Drugs can be stored and used later	1	0.029
Everybody in our family prefers it	1	0.021
Drugs for common diseases are known, one can take drug without consulting doctor also	2	0.015

Number of respondents = 5.

The first column of table 11 shows different opinions or items expressed by five different respondents in favour of Allopathic system of medicine. The second column shows number of

persons mentioned each or similar items. The third column is for salience of each or similar items. It conveys how important the opinion is among people or how much place of respondent's mind is occupied by one particular feeling. Though there are many respondents, only five have been selected to avoid inconvenience.

The salience of the first opinion is 0.153. It tells that more than 15 per cent of one respondent's mind is occupied by the feeling that in ole age Allopathy only is the effective system of medicine. Similarly, effectiveness of Allopathy over other systems, quick relief, type of illness, etc. are the important concerns which people consider before choosing Allopathic system of medicine.

5.5.2. Preference for Homeopathy

Table 12. Preference towards Homeopathic System of medicine

Reasons	Freq	Salience
Permanent cure, removal of the disease	2	0.147
Good for children	4	0.147
Drugs are mild	1	0.140
Good in fever, cough & cold	1	0.140
Cheap	5	0.129
Good in preliminary stage of the disease	1	0.126
No cost of pathological test	1	0.084
Easy to take	1	0.042
Slow but effective	1	0.042

Number of respondents = 5.

People who prefer Homeopathic system of medicine, for them permanent cure or removal of the disease, age of the patient, nature of drug, type of disease, cost, etc. are important points of concern.

5.6. Summary, thesis, and conclusion

Though interpretation of each coefficient is based on the assumption that impacts of other variables remain controlled, if we relax it for the sake of simplicity then we can postulate that: children and adults in small families of rural Cooch Behar whose household heads are less educated and frequently travel places within 10 kms range in a month and whose standard of living is high irrespective of monthly cash income, with high severity of disease and strong preference for Homeopathy and Allopathy and public sources of care and who highly disregard

quality of care and remain neutral to cost aspects are likely to receive care more from modern source.

Among the characteristics of the subject, the family characteristics or more specifically, the demographic factors like age and family size are very important service related determinants. The quantitative section indicates (table 10) the 5-14 age group is neglected, the qualitative section (tables 11 and 12) found people's concern for children and older age group. However, we need not to follow strictly sharp divisions in age groups for policy prescriptions. We may postulate that some sort of negligence is there with morbidities in the 5-14 age group or in its neighbourhood and the issue is to be addressed properly.

Though the impact of education is not statistically significant, we would like to incorporate findings of both quantitative and qualitative sections. In table 11 we find two respondents who prefer self-treatment. Though the salience is very less (in last row of the table), if we incorporate this finding with the same of quantitative section, we get one indication that in rural Cooch Behar people with moderate or high education have a tendency to go for self treatment. Policy makers must take note of this with care.

Coefficients of quality of care and those of income and cost draw special attention. As utilisation in modern facilities increases when quality of care degrades, lowering of it should not be an instrument to increase utilisation. As we have seen that appeal for utilising a care from modern source is considerably strong as it outweighs financial considerations, we would project the view that there should be some provisions so that patients receive quality treatment from modern sources. Otherwise the health care economy would produce unwanted unhappiness during sickness and aggravate the situation.

six VI Reference

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