Measurement and Pattern of Morbidity and the Utilization of Health Services: Some Emerging Issues from Recent Health Interview Surveys in India

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In this paper, nine recent health interview surveys in India are critically examined in terms of their methodology and findings. Some broad issues related to the empirical measurement of morbidity and its relationship with development are addressed. The relative strengths and weaknesses of different approaches for eliciting information on disease prevalence or burden in a community are discussed.

Key words: India; health care utilization; health care expenditure; disease pattern

Measurement of morbidity, particularly in developing countries, presents a difficult task for both health planners and researchers. Information relating to the prevalence of disease in a community is necessary for any public health program to allow timely intervention, prevention, control and eradication of the disease. In addition, the incidence of various types of disease indicates the potential need for such resources as hospitals, dispensaries, laboratories, rehabilitation centers and home nursing facilities. Information on these indicators is of paramount importance for health planners and policy makers. With the increased interest in the problems of children, women of reproductive age and the elderly in developing countries, data on their illnesses are fundamental to the crystallization of programs for their benefit.

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Completeness of morbidity reporting is subject large variation not only between countries but a within the country by region and community depends on many factors which can be categoriz into four groups: a) the government machinic (central, state and local), which includes lat regulations and the administrative strength respective health departments; b) the physic environment and types and severity of diseat common in the area; c) the number of practicic physicians in the area and their profession strength and social attitudes; and d) the socioeconomic, demographic and culture characteristics of the people.

In many developing countries the informatic provided by the health ministries on morbidity inadequate. The information is generally aggregate on the basis of the use of health facilities, and by and large provided by government institution Various studies have pointed out that private physicians, pharmacists and traditional healers are the primary sources for the treatment of acute illnesses, especially in rural areas (Duggal and Amin 1989; NCAER 1991; George et al. 1994; Visaria and Gumber 1994; Rohde and Viswanathan 1996). Moreover, a sizeable proportion of poor rural people do not seek treatment at all due to unavoidable reasons. Also, unlike in developed countries, a majority of the people in India are uninsured (Gumber 1997). As a result, the morbidity data based on hospital records, though a useful source of information on prevalence of disease, depict only a partial picture of the health status of the people. Thus, it has been increasingly suggested that for administrative planning, the public health agencies must obtain morbidity data by means of special detailed studies and sample surveys, rather than depending upon routine reports that are subject to numerous limitations. This approach to the problem has already been put into effect through the establishment of Panel Data Collection Agencies on levels of living, initiation of Demographic and Health Surveys (DHS) mainly in African and Latin American countries and the establishment of national level agencies, such as the National Sample Survey Organisation (NSSO) in India.

This paper attempts to review critically some of the recent health interview surveys carried out in India specifically dealing with morbidity patterns and the utilization of health services. Some broad issues related to the empirical measurement of morbidity and its relationship with development are discussed in section I. A critical review of survey design methods, concepts, definitions and procedures adopted in both national and regional health studies is presented in sections II and III.

Their main findings on the incidence of morbidity, disease pattern and the utilization of and expenditure on health care are discussed in section IV. The last section summarizes the issues and guidelines for future health surveys in developing countries like India.

Measurement of Morbidity and Its Relationship with Development

Information on mortality is relatively easy to obtain if a proper death registration system has been developed. The overall mortality rate as well as the disease specific rate, although the most important and widely used health status indicators, do not always reflect the extent or severity of the burden of a particular disease in a community. Most people who suffer an illness do not die because of their disease; some simply become disabled and frail.1 However, it is evident from substantial research studies in developed countries that frailty and disability are very subjective conditions and are perhaps more difficult to measure accurately than acute ailments. The magnitude of non-fatal diseases is typically reflected in morbidity data. Figure 1 shows the dimensional linkage between mortality and morbidity which is usually called the "Morbidity Pyramid". The tip of the pyramid. "deaths", accounts for only a fraction of the total number of illnesses irrespective of whether treated or not.

Recently three important questions have arisen in the literature on conceptualization and measurement of morbidity. First, has the shape of the pyramid changed due to a decline in mortality and an increase in disability? Second, has the base of the pyramid widened because of increasing frailty and disability in an aging population? Third

^{1.} For the first time an effort is made in the World Development Report 1993 to estimate the global burden of disease by combining the effect of both fatal and non-fatal diseases on the loss of healthy life. The report clearly highlights that the disease burden is the highest among developing countries, but disability remains a global problem.

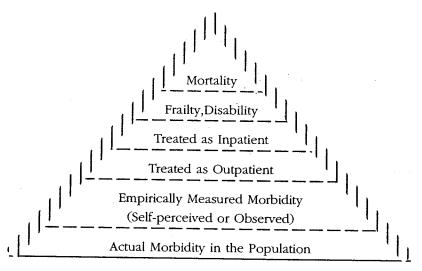


Figure 1 The Morbidity Pyramid

does the reporting of morbidity improve due to a) increased awareness, knowledge and purchasing power of the people, and b) lowered

misclassification between self-perceived at observed (clinically confirmed) measureme criterion (Figure 2)?

Self-perceived	Observed (Clinically Diagnosed Diseas			
(Illness)	Yes	No		
Yes	A	В		
No	С	D		

- A Disease and Illness classified according to both criteria
- B Illness self-reported but disease not observed such as backache, headache, stomach and other joint pains, unclassified fever, ϵ
- C- Disease observed but illness not self-reported such as anemia, malnutrition, hypertension, HIV infection, etc.
- D It is neither perceived nor observed, thus labeled as a "Healthy" group. But it may include frail population and those perceivi particular behavior such as smoking and alcoholism, and/or living in a degraded environment who suffer a higher risk morbidity.

Figure 2 Self-Perceived vs. Observed Morbidity

 Table 1
 Determinants of Morbidity in India : State Level Data, 1990 (Double-Log Regression Model)

	Independent Variable	Alternate Regressions				
1		1	2	3	4	
1.	Per capita state domestic product	-0.787		_	-0.975	
2.	Formala literary (0/)	(.032)			(.017)	
۷.	Female literacy (%)		0.253	3 4 0.975		
2	W.1		(.448)		(.001)	
3.	Males employed in non-agriculture (%)	_	_	-0.513	-1.089	
				(.294)	(.092)	
	Constant	7.086	-0.336	2.400	8.006	
		(.022)	(.773)	(.180)	(.001)	
	R squared	0.29	0.04	0.08	, ,	
	Number of states	16	16	16	16	

Figures in parentheses show the level of significance. Annual morbidity rate is calculated from the data provided by NCAER 1991).

 Table 2
 Main Focus, Target Population and Area Covered in the Selected Health Surveys

. :	Survey/Study/Area Covered	Main Focus	Target Population		
1.	All India (Rural & Urban) NSS (1992); Visaria and Gumber (1994); Gumber (1994)	Utilization & treatment expenditure for illness & injury	All population		
	NSS (1991); Visaria and Gumber (1992)	Maternal and child health	Children aged <5 and mothers of children aged <1		
2.	All India (Rural & Urban) NCAER (1991); Deolalikar and Vashishtha (1992)	Morbidity pattern, utilization & treatment expenditure on illness & injury	All population		
3.	Rural Madhya Pradesh, Rajasthan & Uttar Pradesh NCAER (1992)	Morbidity pattern, utilization & expenditure on health care, maternal and child health, role of NGOs in health delivery	All population, children, pregnant mothers		
4.	Jalgaon in Maharashtra (Rural & Urban)	Morbidity pattern, utilization & expenditure on health care, maternal and child health, births	All population, children, mothers		
	Duggal and Amin (1989)	and deaths			
5.	Rural Kerala Kannan et al. (1991)	Morbidity pattern, utilization & expenditure on health care, child care, births and deaths	All population		
	Rural & Urban Kerala Kannan et al. (1991)	Stock of health delivery system by treatment type & personnel	All hospitals, laboratories, drug stores		
6.	Bombay City Yesudian (1990)	Utilization & expenditure on health care, health insurance	All population		
7.	Madhya Pradesh (Rural & Urban) George et al. (1994)	Morbidity pattern, utilization & expenditure on illness & maternity	All population		
8.	Rural Haryana Kumtakar et al. (1993); Berman et al.(1994)	Maternal and child health & development, food intake, morbidity, activity & employment status of mothers	Poor households having working mother with child(ren) aged <6		
9.	Rural Bangladesh (Matlab Thana)	Maternal and child health & development, food intake/availability, activity & morbidity pattern	Muslim households having children aged <5 and their mothers		
	ICDDR,B; Chen et al.(1981); Gumber and Chen (1996)		monters		

Alter and Riley (1989) and Riley (1990) have argued, on the basis of time series data from developed countries, that morbidity has increased with social and economic development despite the decline in age specific mortality. They put forward this hypothesis on the basis of evidence that there has been a rise in the proportion of frail persons (mostly aged) who have survived due to improved medical

technology, but are at a higher risk of having a disease or multiple diseases.

A similar hypothesis is also raised by Panikar and Soman (1984) and Kumar (1993) while examining the health status of the people in Kerala state. Kerala is the only state which has achieved a considerably lower infant and child mortality, low birth rate and

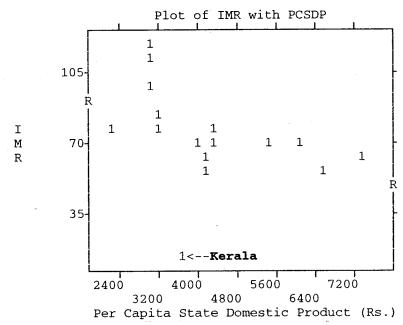
almost universal female literacy; the health status of Kerala according to these indicators is similar to that of many developed countries. However, Kerala has also shown the highest morbidity rate among the Indian states.² Kumar and Vaidyanathan (1988) put forth the argument that morbidity correlates with population density and that Kerala, having the highest density in India, could be expected to have the highest morbidity. Other possible explanations are "supply induced demand," as Kerala is the most developed Indian state in terms of health infrastructure,³ and the change in the perception of morbidity in Kerala due to the increased level of literacy and education.

To investigate the relationship between development and morbidity in India, we plotted the infant mortality rate and annual morbidity rate estimated from the NCAER (1991) survey with per capita state domestic product (PCSDP) for 16 major Indian states for 1990 (Figure 3). To our surprise, infant mortality does not relate significantly with per capita state domestic product, but exclusion of Kerala does show a significant negative relationship with per capita state domestic product. On the other hand, annual morbidity rate is strongly and negatively related with per capita state domestic product; the exclusion of Kerala does not change the relationship. Population density does not turn out to be a significant predictor of annual morbidity rate as postulated by Kumar and Vaidyanathan (1988). Female literacy and percentage of males employed in the non-agricultural sector do not have direct influence on annual morbidity rate, but it conjunction with per capita state domestic product both turn out to be important determinants o morbidity (Table 1). Thus, morbidity in India appears to be inversely related with level o development, contradicting the hypothesis stated earlier by Alter and Riley. However, during 1973 74, annual morbidity rate estimated by the NSS die not correlate with per capita state domestic produc suggesting conceptual and/or measuremen problems in estimating both acute and chronimorbidity. Therefore, for further exploration of the relationship between morbidity and developmen in India, there is a need to collect time series dat on the subject with a better survey design and dat collection instruments.

Methodology Adopted in Selected Healtl Interview Surveys

Table 2 highlights the main focus of the eight most recent health surveys undertaken in India. Two surveys conducted by the NSSO in 1986-87 (NS 1992) and another by the National Council c Applied Economic Research (NCAER) in 199 (NCAER 1991), covered rural and urban areas c all Indian states; the survey by Kannan et al.(1991 covered all the *panchayats* (village elected councils in Kerala; and five other surveys were confined t smaller areas (located in states of Haryana, Madhy Pradesh, Maharashtra, Rajasthan and Uttar Pradesh An additional longitudinal survey conducted i rural areas of Matlab region during 1978-79 by th International Centre for Diarrhoeal Diseas

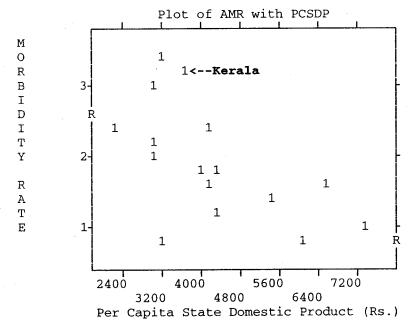
- 2. According to the NSS (National Sample Survey) data for 1973-74 and 1986-87, and the NCAER (National Council of Applie Economic Research) data for 1990 and 1993 relating to the utilization of health services for major states, the morbidity rate we the highest in Kerala followed by Punjab and Orissa and the lowest in Gujarat preceded by Assam and Karnataka (Gumbe 1997). However, there was on conclusive relationship between the level of morbidity and expectation of life at birth. It argued that the reported inter-state differentials in the morbidity rates may be incorrect because of the well-known difficultic of obtaining dependable data on morbidity in the household surveys.
- 3. For instance, Kerala has the highest number of registered nurses per 100,000 population (141 with a range of 8-141 among 1 major Indian states); the figure for doctors is 54 (range 6-62) and that for hospital beds is 234 (range 14-234). More than 8 percent (with a range of 17-86) of births in Kerala are attended by trained professionals, and the maximum radial distance covered by a sub-center is 1.5 km. (range 1.5-6.7) and by a Primary Health Center (PHC) is 3.6 km. (range 2.8-15.8).



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With Kerala : IMR = 101.225 · .006 PCSDP (Sig t = .133, R Squared = .154, N = 16) Without Kerala : IMR = 110.801 · .008 PCSDP (Sig t = .016, R Squared = .368, N = 15)



With Kerala: AMR = 3.277 - .0003 PCSDP (Sig t = .025, R Squared = .310, N = 16) Without Kerala: AMR = 3.095 - .0003 PCSDP (Sig t = .028, R Squared = .321, N = 15)

Figure 3 Plot of Infant Mortality Rate (IMR) and Annual Morbidity Rate (AMR) with Per Capita State Domestic Product, 1990

Research, Bangladesh (ICDDR,B) is also considered for methodological comparison. Except for the two surveys of rural Haryana and rural Bangladesh, the surveys covered the general population. Of the nine surveys reviewed, four collected information from both rural and urban households, while four were limited to rural and one to urban households only.

The objectives and hypotheses of these surveys were numerous, but in general they focused on four issues: morbidity patterns, utilization of health services, health care expenditure, and maternal and child health. All nine surveys collected information on morbidity, eight (excluding the survey of Bangladesh) on utilization of health services as well as expenditure on health care, and six—excluding the surveys undertaken by NCAER (1991), Kannan et al.(1991) for rural Kerala and by Yesudian (1990) for Bombay-on maternal and child health. For the two surveys of rural Haryana and Bangladesh, the primary focus was maternal and child health, while for the remaining six surveys it was utilization of and expenditure on health care. None of the surveys emphasized the measurement of morbidity as their primary objective.

Survey Design

The two surveys of rural Haryana and Bangladesh limited their focus to households with pre-school children and their mothers. The selection of the location for the survey (sample district/region as well as villages) was purposive. After listing all the households having at least one pre-school child and mother in the selected villages, the households were stratified according to economic status. In Bangladesh, a sample of 135 households representing the agricultural muslim community was selected from three size classes of land ownership; in rural Haryana the sample of 276 households was restricted to poor families having a working mother classified as self-employed,

casual labor or unpaid family worker (Table these two surveys, the primary focus wa maternal and child health; as a result their sa was not representative of the general popula Regardless of this fact, the information colle was not limited solely to the index child mother, but extended to all members of household.

The remaining seven surveys that focus prim on utilization of health services followed a stage sampling design, the area (villages/ui blocks) representing the first stage and househ the second stage units. However, the Ker Bombay, Jalgaon and Madhya Pradesh surveys not conduct houselisting and as a result no sec were selected randomly with or without the us a pre-existing official house list. Further, the surv of Kerala, Bombay and Jalgaon selected area u without adopting any scientific procedure such probability proportional to population size (Pl In the Kerala survey, although the coverage v widespread (about 80 percent of the total village within each panchayat village only one ward v randomly selected and ten households contact In the Madhya Pradesh survey, two districts w selected on the basis of scores on certain indicat representing better and poorer performance. At district level, the rural sample was drawn from t PHCs depicting better and poorer performance health indicators; the urban sample covering to towns (including the district headquarters) w taken from two wards in each town. The four surveys finally collected information fro 9940, 1657, 590 and 770 households, respective (Table 3).

The surveys of NCAER (1991), NCAER (1992) at NSS (1992) followed a better sampling design. The villages and urban blocks were selected according.

 Table 3
 Survey Design Followed in the Selected Health Surveys

Study/Sampling Design	dy/Sampling Design House list/ Stratification		Morbidity Recall Period	Number/Time of Visits
NSS (1992): Villages/urban blocks according to probability proportion to population (PPS) stratified by agro-climatic region	Reporting hospitalization/ other illness	4 HHs each from 8546 villages and 4656 urban blocks Total 52808 HHs	Hospitalization: 365 days Other illness: 30 days	Single visit Villages/blocks divided quar- terly July'86- June'87
NCAER (1991): Villages according to PPS/Towns stratified by six sizes	Five income groups	18012 HHs from 1061 villages & 1873 blocks from 632 towns	Two weeks	Single visit May-July'90
NCAER (1992): 2 Districts (one each better/ worse off by child mortality & literacy) from 3 states. Forty villages per district according to PPS	Six income-caste groups	2385 HHs (10 each from 240 villages)	Acute: One month Chronic: Long standing	Three visits June 16-July 15, July 23- Sept 10, Oct 1-31, 1991
Jalgaon: Average All-India district, 6 villages (3 remote & 3 close to town), 6 wards from Jalgaon city	No	590 HHs (254 urban, 336 rural)	Acute: One month Chronic & Disability : Long standing	Three visits Jan 1-30 1987 May 1-30 Aug 15- Sept 13
Kerala : All <i>panchayat</i> villages (1001) and 10 HHs per village	No	9940 HHs	Acute: Two weeks Chronic & Disabi- lity : Long standing	Single visit July 1-10, 1987
Bombay City: Three municipal wards comprised 21 election wards, 37 polling stations and 15% of HHs per polling station	No (voters list)	1657 HHs	Short-term: Two weeks Chronic & Catastrophic: One year	Single visit 1989
Madhya Pradesh: 2 Districts (developed/ under developed): 2 PHC(better/poorly utilized) per district, 3 villages (PHC village, Sub-center village, remote village) per PHC; 2 wards each from 2 towns (including district headquarters) per district	No	770 HHs (291 urban, 479 rural)	Acute: One month Chronic & Disability: Long standing	Two visits Sept. 1-14 1990 Feb . 1-14 1991
Haryana: Purposive selection of one district & one ICDS block, four villages according to various indicators	HHs below poverty line, at least one child aged<6 of working mother	276 HHs	15 days	Six bimonthly visits, 1989-90
Bangladesh : Purposive selection of 4 villages near Matlab Sub-headquarters of ICDDR,B	Muslim agrl. HHs by 3 land holding sizes, having at least one child aged<5	135 HHs	One week for children aged<5. One month for aged 5+	52 weekly visits for children, 12 monthly visits for others, June 12, 1978-June 10, 1979

to probability proportional to population, and then all the households were listed. In both NCAER surveys, annual household income (combined with caste group in the later survey) was used for stratification, but instead of a weighted sample, two households were selected from each stratum. In the NSSO (1992) survey, the specified number of sample villages/urban blocks from every agroclimatic region of the state was selected according to probability proportional to population size. For the second stage sample units, houselisting was conducted in each sampled village/urban block to prepare a frame of households grouped as those in which at least one member had been hospitalized during the 365 days preceding the survey; and those in which at least one member had fallen ill or had been injured during the thirty days preceding the date of survey.

Items of Information Collected

The detail on individual items of information in a survey is primarily linked with the survey's precise objectives and hypotheses and the background of the study area. Information on the socioeconomic characteristics of the households along with the demographic particulars of each member of the household are the most common features of the surveys. Besides, the reviewed surveys covered ten other broad categories of items relating to housing conditions and environment; illness particulars; treatment behavior and expenditure pattern; chronic diseases and disability; births and immunization; prenatal, maternity and postnatal care and associated expenditure; deaths; family planning; health behavior, knowledge and quality of service; and anthropometric measurement, energy expenditure and dietary intake.

Despite having a common theme of morbidity and utilization of health services, the specific items of information varied substantially among the surveys.

For instance, only four surveys collected information on one of the most important subject in terms of socioeconomic status (SES) of ti household and preventable health care: the housing condition and environment. Likewise, within tl category of illness and medical treatment, s surveys asked if an illness was treated or not, b only two inquired about the underlying reaso: for its non-treatment. Whether the illness impose any restriction on normal activity, an important issu in distinguishing severe and non-severe illness and the associated differential in treatment-seekir behaviors, was a question posed by three survey only. Illnesses involving severe restriction of activity-confinement to bed-was collected by the NSS and Bangladesh surveys only. The NSS limite the information to untreated illnesses with th rationale of investigating how many of suc illnesses were really severe and the underlyin reasons for not seeking treatment. Similarly, th information on illnesses involving hospitalizatio was collected in much greater detail by the NS than any of the other surveys. Furthermore, non of the surveys collected information simultaneousl on the duration of illness, confinement to bed and treatment, and thus none could help in exploring the issues related to delayed treatment seeking behavior.

The factors influencing the choice of treatmen provider including accessibility (distance) were measured in only two surveys. Surprisingly, the NSS paid no attention to such behavioral issues Also, none of the surveys explicitly considered multiple providers or multiple use of individual providers. Many such surveys have artificially truncated the number of treatment actions that can be reported or use categories of providers that seem obvious to survey designers but may be misleading to respondents. For instance, in rural India many types of providers are called "doctors", health

centers may be called "hospitals", and public sector providers may see private patients. As a result it becomes difficult to draw a precise line between private and public providers.

In regard to information about expenditure on treatment, there were two important distinctions between the National Sample Survey and the rest of surveys. The NSS considered only the direct cost-expenditure incurred on fees, medicines, clinical tests, bed charges and surgery-whereas other surveys included indirect cost such as expenses on transportation, special diet, rituals, gifts, tips and other miscellaneous expenses. Secondly, other surveys asked the expenditure amount under these heads separately, whereas the National Sample Survey did not collect such details. Instead they coded the terms of provision of these services as "completely free", "partly charged for payment", and "wholly charged for payment." The information on other indirect costs associated with illness, such as loss of earnings of the sick person or caretaker, is least touched upon by these surveys. Very little information was collected about how the cost of treatment was met, whether it was through insurance, reimbursement from the employer, personal saving or borrowing, particularly when illnesses required hospitalization and/or long-term treatment.

Though some coverage on chronic illness was attempted by all the reviewed surveys (with the exception of Bangladesh), the information is scant and misleading. The same is true with regard to disability, an issue covered in only three surveys.

Items of information relating to births, immunization, prenatal, maternity, and postnatal care pertaining to one year, are adequately dealt with by the National Sample Survey (1992) and to some extent (excluding postnatal care) by the

NCAER (1992) and Jalgaon surveys. However, the National Sample Survey (1992) left out two important items: expenditure associated with births (domiciliary and hospital) and their registration; and source and expenditure related to abortion and miscarriage. Details on these items were collected by the NCAER (1992), Jalgaon and Bombay surveys. The Madhya Pradesh survey covered maternity but excluded details regarding births and immunization.

Three surveys asked information on both deaths during the previous year and the use of family planning methods, but only the National Sample Survey(1992) recorded ample detail. Even then, the National Sample Survey(1992) did not enquire about expenditure, registration and cause of death. The information on cause of death would have been useful in adjusting for the disease specific prevalence rates.

Some scanty information was collected by the Kerala survey on health behavior and awareness about smoking and alcoholism, reading literature on health, and knowledge of nearest primary health center and hospital. Similarly, the issue of quality of care was assessed through only one direct question on the degree of satisfaction with treatment by the NCAER (1992) and Bombay surveys. Details on anthropometric measurements, dietary intake and time allocation for various activities were limited to the Haryana and Bangladesh surveys, whose primary focus was to examine the growth velocity of children and the health and nutritional status of their mothers.

Background on Morbidity Measurement

Before discussing the issues related to the definitions of morbidity adopted in the various health surveys, it is worth presenting some background about the National Sample Survey Organization, one of the oldest and largest data collection institutions in India, and its efforts towards the measurement of morbidity.

The National Sample Survey was set up by the Government of India in 1950 as a continuing system of multi-purpose surveys designed to fill gaps in the data required for planning for economic and social development. During the last four decades of its yearly socioeconomic surveys, NSS collected information on morbidity in nine rounds and physical disability in six rounds; only once was the enquiry on physical disability combined with the morbidity survey. Until 1980-81, the surveys on morbidity patterns were rather exploratory in nature. The aim was to identify better data collection methods and instruments relating to recall period, proxy respondents, definitions of illness and items of information on utilization of health services. For instance, in the first morbidity survey (seventh round, October 1953-March 1954) the sample consisted of only 8235 rural and 1720 urban households, and information on morbidity with a recall period of 30 days was collected through a direct question (without much probing). The details were limited to six items, namely sex, age, marital status, industrial status, cause of illness and duration of illness (NSS 1961: 3-4). The same procedure continued in the subsequent three rounds (eleventh to thirteenth, 1956-58) with a relatively larger sample size.

In 1960-61 (sixteenth round) a special study on morbidity using a longitudinal approach (repeat visit) was conducted in five villages and three cities with the objective of examining the effectiveness of different definitions of disabilities, recall periods, proxy respondents and various probes for eliciting information on morbidity. Five probes were introduced in order to ensure better morbidity reporting during the last two months. The

methodological findings of the survey were app through a pilot study in 1961-62 (sevente round); the information was collected separ. for four weeks during the recall period of 30 c but through a single visit. It was found that morbidity information relating to family mem other than respondents themselves tend understate the actual number of illness episc particularly for the weeks preceding the last v prior to the date of survey (NSS 1968: 18). Ir twenty-eighth round (October 1973-June 1 information on morbidity with a recall perio two weeks was collected along with the end on disability, births, deaths and migration addition, an effort was made to collect data chronic diseases prevailing among the sar population at the time of survey. However, in round the morbidity particulars were colle through a direct question (e.g., "Did you have illness or injury during the last two weeks?") wit much probing, because during sixteenth seventeenth rounds it was found that three-for of illnesses alone were reported through question. As a result, the incidence or prevalof morbidity in 1973-74 was much lower than the of the sixteenth (1960-61) and seventeenth (1 62) rounds. Thus, conceptual changes betw rounds, though introducing some r comparability problems in the NSS data morbidity, have enriched our knowledge of subject.

After going through rigorous methodolog exploration during the 1950s, 1960s and 1970s primary focus shifted from morbidity to utiliza patterns during the 1980s. Two major surveys vlaunched by the NSS during 1980-81 (thirty round) and 1986-87 (forty-second round), objectives of which were to make an assessr of the benefits received from public investment health services, and to understand the bro

health needs of various sections of the society. Both the surveys gathered information on the extent of coverage under public health programs (vaccination or immunization); provision of health care and nutritional supplement for mothers and children; and the utilization of medical services, including hospitals as an inpatient, for the treatment of illness and injury and the costs incurred for that purpose. These themes were covered in separate schedules and canvassed to a different set of sample households in the same sample village/urban block. The data relating to the first two themes (maternal and child health including immunization) were collected from a random sample of all the households listed in a village/urban block. Unfortunately, the 1980-81 survey data could not be processed due to delays in the availability of required computer facilities. Therefore, the tabulated data of the 1986-87 survey are the first results on the utilization of health services in India covering both inpatient and outpatient care.

Defining and Measuring Morbidity in Selected Health Interview Surveys

There is considerable confusion and disagreement among researchers regarding approaches used in the literature for defining and measuring various components of morbidity. Nevertheless, their efforts are in the direction of measuring an ideal state which is the health status of the people. The WHO has defined health as the state of physical and mental well-being, and any deviation from such state is to be considered as illness. During the 1980s a series of studies were carried out for defining and measuring morbidity (Kroeger 1983;1985;1989; Ross and Vaughan 1986; Huntington et al. 1989; Johansson 1991;1992; Murray and Chen 1992; Kleiman 1994; Sen 1994). These studies have raised a set of methodological issues on self-perceived versus observed morbidity. The former approach is based on pain and suffering as perceived by an

individual while the latter relies on clinical assessment of any such abnormality. Many health surveys, including all nine under review, have adopted the self-perceived approach due to various logistic reasons, the most important being cost. Belcher et al. (1976) estimated that a medical examination survey turned out to be eight times costlier than a self-report survey. The issues discussed in the literature relate to verifying the consistency of the responses on self-perceived morbidity, improving reporting on morbidity and health care seeking behavior, and reflection on consequences of morbidity such as long term functional disability and handicaps.

Reliability and validity of self-perceived morbidity can be checked by a medical examination followup, or by a revisit with a separate combination of interviewers having different socio-educational background to a sub-sample of the respondents. Both the tests followed immediately after the original interview. The medical examination test, however, helped only in checking the point prevalence of illness and not those illnesses which ended during a recall period. On the other hand, the medical examination approach was more useful in observing those diseases which were not felt in terms of pain and suffering and thus were underreported (e.g. anemia, hypertension, and diseases of malnutrition). Another method related to a validity check is to compare the reported diseasespecific prevalence rate (possibly by sex and age) with the rate obtained from official statistics or use of health facilities.

In none of the nine reviewed surveys were such reliability and validity criteria applied. However, in the Jalgaon survey, in cases of doubtful response an effort was made to cross-check the response with another member of the household (Duggal and Amin 1989: 12). In the Madhya Pradesh survey,

when the researchers realized that the morbidity estimates were somewhat inflated by the interviewers and that female morbidity was undercounted because the interviewers were males, a sub-sample of 100 rural households from one PHC was resurveyed after a gap of 11 months in January 1992 with the help of female investigators (George et al. 1994).⁴

Most of the reviewed surveys have followed some procedures for improving morbidity reporting. These procedures deal with recall period; proxy respondents; seasonal variability; use of tracer lists and diaries; simpler use of local language and wording of questions; investigation through better medically trained interviewers; and use of various salience criteria reflecting any deviation from normal activity, including confinement to bed or changed diet pattern, as well as consultation with health care provider(s).

Salience Criteria: The NSS in its first survey on morbidity (1953-54) used three salient criteria in deciding whether to consider an individual ill: whether they were confined to bed for at least 24 hours; whether they had abstained from taking normal diet for at least 24 hours; or whether they were unable to attend to normal duties and activities for at least 24 hours due to illness or injury, during the reference period of one month (NSS 1961: 8). These three criteria were also used in the national health surveys of Pakistan and Thailand (Murray and Chen 1992: 500). However, during the thirty fifth (1980-81) and forty second (1986-87) rounds of the NSS, the salience criterion used was whether the person took medicine or sought medical advice, combined with various probes based on a tracer list. The following probes were

conducted not only with the main informant also with several members of the household During the reference period, did you have anyt wrong relating to skin, head, ear, nose, throat, to arms, hands, chest, heart, stomach, liver, kid legs, feet or any other organ, or any other par the body? b) During the reference period, did take medical treatment or medicine? (NSS 1 96)

An ailment can cause a varied degree of tempo disability, ranging from hospitalization (i.e. se disability), confinement to bed at the reside restriction of activity (i.e. interruption of nor vocation) or no disability at all (in cases of anen In the Kerala survey the salient criteria w whether illness imposed restriction of nor activity and/or whether a physician was consu (Kannan et al. 1991: 61-62). In the Jalgaon, NC. (1991) and NCAER (1992) surveys, the respondwere asked to recall an event of ill health al with the symptoms (without using a symptom and action taken for its treatment. However, o treated illnesses (including self-medicati requiring some expenditure were considered in NCAER (1991) survey. In the subsequent surve NCAER (1992), these shortcomings were address by listing symptoms for which treatment was sought (see Table 4).

Recall Period: The length of the recall perio varied not only by type of disease, its degree severity and use of health services, but also by socioeconomic background of the area and pers involved. Hence defining a recall period appropriate length is somewhat difficult and can be universalized. However, in various studies pointed out that a long recall period can leace

^{4.} The reported morbidity level among females improved, but the overall morbidity compared to previous visit declined by not than 33 percent. The underlying reason stated was that the respondents, especially males, felt offended for such crecking by a female investigator.

under-reporting of minor or short-term illnesses that were not adequately cared for, and sometimes over-reporting severe illnesses that occurred in the distant past but have a high telescoping memory effect. The recall period of one week is considered too short for certain population groups (children and the elderly) due to their relatively longer recovery periods; as a result the measured incidence remains small and information on most health variables, such type of healthcare provider contacted, service mix, duration and cost of treatment remains incomplete.

Alternatively, surveys should be designed using a continuous repeat visit method which helps in recording information on completed episodes. In the Bangladesh survey, every child under five years was visited weekly during the entire year with a one week recall period, which implies that every day was accounted for while recording the child's morbidity particulars. In the light of the arguments on the one week recall period, we have reestimated the prevalence and incidence rates among children by varying the length of the recall period in rural Bangladesh (Gumber and Chen 1996). Figure 4 illustrates the relationship between prevalence and incidence rates according to the length of reference period (from one day to four weeks). The difference between the percentage of children reporting illness (prevalence) and those suffering from a new episode of illness (incidence) declines with the length of reference period. Interestingly, the point prevalence exceeded the one week incidence rate; the difference was more during monsoon (about 8 to 18 percentage points), suggesting that for many children the disease continued for more than a week. This pattern can be used to help decide an appropriate length of recall period. It can be inferred that if multiple episodes/diseases (co-morbidity) are better recorded on a two-week recall period, that system may be the most appropriate for general morbidity reporting. One month or longer recall periods for chronic illness reporting would be most appropriate for those health surveys that collect information on a single visit to the household.

In the reviewed surveys, four used a two-week recall period and the other five adopted a one month period for general morbidity reporting. Five surveys exclusively asked for information on chronic illnesses and used a recall period one year or longer (see Tables 3 and 4). Two surveys, NSS (1992) and Bombay (Yesudian 1990), even collected detailed information on severe illnesses requiring hospitalization and used a recall period of one year. The underlying rationale is that hospitalization is a rare event and important enough to be remembered by respondents, so to have an adequate number of hospitalization cases in the sample, a longer recall period of one year was used.

Seasonal Variability: A number of surveys have reported seasonal variations in the prevalence of disease as well as morbidity clustering in particular months/seasons (Figure 4). Hence, if the health survey covers only a part of a year, the estimates for average annual morbidity and disease prevalence rates can become biased. Three surveys—NCAER (1991), Kerala (Kannan et al. 1991) and Bombay (Yesudian 1990)—collected information on morbidity through a single visit to the households at particular points in time; therefore, their morbidity estimates are not free from seasonal bias. Issues relating to seasonal variation can be tackled in three possible ways and all three methods were found in the reviewed surveys.

First is the longitudinal approach in which the morbidity particulars of the sample population are collected for the whole year through continuous repeat visits. This approach was used in the

 Table 4
 Criteria Used in Defining Self-Perceived Morbidity in the Selected Health Surveys

			Criterion/Procedure	Survey		
I.	Ger	neral	Morbidity (Acute Illness)			
	1. Direct question on recall of an event relate		ect question on recall of an event related to ill health	NCAER (1992), Jalgaon, Bombay, Madhy Pradesh, Haryana		
	2.	Use	e of salience criteria			
		(a)	Consultation with a physician	NSS (1992), NCAER (1991), Kerala, Jalgaon		
		(b)	Restriction of normal activity	Kerala		
	3.		e of a tracer list/probes relating to different esiological systems	NSS (1992), Bangladesh		
	4.	Def	inition/specification of untreated illness			
		(a)	No care	NCAER (1992), Jalgaon, Bombay, Madhy Pradesh, Haryana, Bangladesh		
		(b)	No care as well as self-medication	NSS (1992)		
		(c)	Excluded no care but considered self-medication	NCAER (1991), Kerala		
	5. Seasonality		sonality			
		(a)	Not considered	NCAER (1991), Kerala, Bombay		
		(b)	Repeat visit	NCAER (1992), Jalgaon, Haryana, Madhy Pradesh, Bangladesh		
		(c)	Spread of sample over the whole year	NSS (1992)		
	6.	Prox	xy respondent			
		(a)	Not considered except for young children where mothers/care takers were proxy respondents	Bangladesh		
		(b)	Head of the household or main respondent for the rest of members	NSS (1992), NCAER (1991), NCAER (1992 Kerala, Bombay, Jalgaon, Haryana, Madhy Pradesh		
II.	Seve	ere Il	lness Resulting in Hospitalization	NSS (1992), Bombay		
III.	Chr	onic	Illness			
	(a)	Not	considered	Bangladesh		
	(b)		focused but enumerated within the recall od of acute illness	NSS (1992), NCAER (1991), Haryana		
	(c)	Long	g standing	NCAER (1992), Kerala, Jalgaon, Madhy Pradesh, Bombay		
IV.	Han	dica _l	ps (Permanent/Long-standing)	Kerala, Jalgaon, Madhya Pradesh		
V.	Fun	ction	al Disability	Not considered by anyone		

Bangladesh survey where the number of repeat visits was equated to 365 days divided by the length of recall period (52 weekly visits for children with a recall period of one week and 12 monthly visits for the rest of population with a recall period of one month).

Second, due to various logistic reasons, the continuous repeat visit approach is often replaced by a few select repeat visits (three or more) representing different seasons in a year. The NCAER (1992) and Jalgaon surveys selected three visits, Haryana six visits in the year. In the Jalgaon survey, three visits representing winter, summer, and monsoon seasons were spread throughout the year, while the NCAER (1992) visits represented premonsoon, monsoon, and post-monsoon, covering only the mid-June to October period (missing the influence of peak winter and summer season). Similar bias was found in the Madhya Pradesh survey where only two visits (in September and February) were selected to average out the seasonal variability.

Third, the entire sample can be spread out during the whole year. This method is adopted by the US national health survey and also by the NSS. In the NSS (1992) one-fourth of the sample villages/urban blocks in each agro-climatic region of the state were surveyed each quarter (during July-September, October-December, January-March and April-June). This approach presumes that the seasonal variability among villages within a region exhibits a more or less similar pattern.

Proxy Respondent: Some studies, including two conducted by the NSS during the 1960s (NSS 1968;1969), have pointed out that proxy respondents tend to report fewer illnesses for others than for themselves. Mothers are usually considered to be the best proxy respondents for children; even

then a couple of micro-studies have shown some gender-bias in favor of a male child, for illness reporting and treatment sought for children (Khan et al. 1989). Similarly, not all the members of households, particularly adult males, are present at the time of interview even with advance notice; if investigators restrict themselves to self-reporting, then the cases of missing information increase. Therefore, proxy reporting has become an essential part of the interview approach (mainly due to time and resource constraints). As a result some bias is bound to exist. In the majority of the reviewed surveys the principal earner-usually the head of household—was asked to provide information on both socioeconomic attributes of the household and illness behavior of each member of the household. In the Haryana and Bangladesh surveys mothers acted as proxy respondents for their children. Conversely, in the longitudinal survey of Bangladesh, an attempt was made not to use proxy reporting for adults. As a result the amount of missing information is unusually large, particularly among working males.

Co-morbidity and Multiple Illnesses: In a majority of the surveys there is no clear evidence of enumeration of more than one episode of acute illness per ill person during the recall period. In the Bangladesh survey, a limit of two episodes per ill person was set for small children with a one week recall period and for the remaining population aged five and over with a one month recall period. It is quite likely that during a longer recall period, some people suffered more than two episodes of illness. About 21 percent of the children and 31 percent of the population aged five and over in Bangladesh reported more than one episode of illness during the recall period (Gumber and Chen 1996). In the NSS survey, at least for hospitalization information, multiple events of hospitalization per hospitalized person were

recorded even if a patient was treated in the same hospital for the same ailment during the recall period of one year. A detailed analysis of 1986-87 data for five states has shown that 5.6 percent of ill persons in rural and 5.3 percent in urban areas were hospitalized more than once; the respective figures for ill persons not requiring hospitalization were 3.5 and 3.6.

The morbidity rate derived by aggregating various spells of illness tends to be lower than those aggregated on the basis of various diseases. In a particular spell of illness, the person may be suffering from more than one disease; if one uses the priority rule—recording the detail of a major ailment only—the prevalence of the neglected disease is underestimated. The number of such disease-mix cases is small, but they are often observed among people who are already suffering from a chronic disease such as diabetes, high blood pressure, arthritis, or anemia. The multiple or clustering of acute diseases is also high among young children and women of reproductive age.

Moreover, if a person suffered from the same disease twice during the recall period but this is considered a single illness, the estimated morbidity rate would be too low. In the Bangladesh survey, for instance, if a child suffered from both diarrhea and measles during a particular spell of illness, it was considered as two separate episodes. Similarly, during a spell of illness, once the stool pattern turned normal for 48 hours or longer the diarrhea episode was considered terminated (Chen et al. 1981: 286); if after 48 hours abnormal stool movements were observed again it was considered as a second episode of diarrhea. About 28 percent of ill persons aged five years and above in Bangladesh, and 32 percent for ages 5-14 years, were classified as having the same disease in the first and second episode of illness during the recall period of one month; however, such cases verare among children under five years due to brevity of the recall period (one week). There it appears that an appropriate and fine distinct between episodes of illness and better accour of multiple diseases or reoccurrence of the dise during the recall period does improve the overlevel of morbidity measurement and dissipation prevalence measurement (Gumber Chen 1996).

The use of health services does not necess cover the entire morbidity profile in the popula It is evident from many studies in develo countries that a good proportion of illnesses reunattended or are treated with home remedies the other hand, health services are being use some specific purposes which do not fall ir purview of general morbidity, such as vaccin: and immunization, family planning, pren delivery and postnatal care, physical check-ups other preventive measures. Also, information utilization of services reflects the number of rather than whole episodes of illness (invo many visits) of outpatients. It becomes difficu adjust for multiple counts. The utilization connotes contact rate and is often misleadir an indicator of morbidity rate.

As mentioned earlier, some health survincluding those of the U.S., make use of h services a precondition for the measureme morbidity. In the reviewed surveys, by and I health service use is one of the probes. The NG (1991) and Kerala surveys considered only the illnesses in measuring morbidity, but include those involving home-remedy and self-medica while the NSS (1992) included these illness the untreated category. It seems the most important factor in explaining the variation in mort estimates provided by different studies is the e to which they count minor illnesses that are m

left untreated. How much inclination the interviewee and interviewer have for reporting and recording such illnesses is another matter of concern.

Health surveys in India have systematically ignored the important role of the non-physician private sector for ambulatory care. The NSS and NCAER, the two recent national surveys, give "private doctor" and "private hospital" as the main private sector choices accounting for three quarters of ambulatory care contacts. Smaller studies indicate that most of these private providers are nonqualified. Recent estimates suggest that this type of treatment accounts for about half of total national health expenditures. We have no large-scale estimate of this pattern of health care use, the largest sector within the health care system. The lack of adequate measurement of where people actually go for treatment is a huge gap in our knowledge, a failure reflected in the almost complete absence of public attention to this source of health intervention.

Impairments and associated functional disabilities and handicaps prevailing in the population have been least researched within the framework of morbidity in developing countries. In the last decade, the WHO (1980) established the relationship between severity of disease and resultant disability and accordingly recommended various classification of impairments leading to different types of disabilities and handicaps.

No attempt was made to collect information on functional disability in any of the reviewed surveys, a fact which could be due to many conceptual difficulties involved in its measurement. Only three

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surveys—Kerala, Jalgaon and Madhya Pradesh—tried to gather some count of long-standing disabilities such as paralysis and polio, blindness, mental retardation, deafness and dumbness in the sample population. The NSS (1992) did not include handicaps in its general morbidity survey, but in the earlier five rounds some attempt was made on the subject.

Results

The main findings which emerge from these surveys on the incidence or prevalence of morbidity and associated differentials by sex, age, socioeconomic status and season, disease pattern, severity of illness, share of public provider and cost of treatment are presented in Tables 5 and 6 and Figures 5 and 6. As far as possible, while keeping in mind their methodological differences in the measurement of specific parameters, these findings have been interpreted. However, to some extent, we have adopted the NSS measurement procedure as the base for comparing its results with those from other surveys.

Except for the Jalgaon and Bangladesh surveys, no other survey attempted to distinguish between incidence and prevalence of morbidity rate due to lack of information on the dates of onset and termination of an illness episode. The NSS (1992) made a distinction only for those illnesses involving hospitalization during last 365 days and for other illnesses it presumed that the majority would have commenced and/or ended during the recall period of one-month. Secondly, in most of the surveys the length of the recall period varied a great deal, so for a comparative picture one has to convert the rates into annual estimates by assuming that all depict incidence.⁵

^{5.} We used the conversion factor: AMR = (IR * 365)/(LRP * NV); where, AMR - Annual morbidity rate per 1000 population, IR - Incidence rate per 1000 population during the recall period, LRP - Length of the recall period, and NV - Number of visits in a year.

The AMR presented in Table 5 shows a wide variation across survey regions and between rural and urban areas during 1986-87 to 1991. Although the AMR varied in rural areas from 727 to 6206, and in urban areas from 273 to 1592, in general the rural rates were found to be higher than the urban rates. Secondly, even within a particular survey the AMR varied across states, with some indication of lower morbidity in the economically advanced regions. In the NSS, the AMR also varied substantially among states, but inter-regional differences in the AMR were greater than inter-state differences. There is a need to explore the reasons for such variation across NSS regions. Finally, besides inter-state or inter-regional variation, the differentials in AMRs among the reviewed surveys are also attributable to failure to distinguish between prevalence and incidence rate. The Jalgaon and Bangladesh surveys collected data on both prevalence and incidence, the NSS(1992) did not specify prevalence or incidence, and the remaining surveys collected only on the prevalence of morbidity. The Jalgaon survey showed that the prevalence was higher than the incidence rate by 54 percent (59% in rural and 48% in urban areas). If we apply a similar adjustment factor to the prevalence rates estimated by the remaining surveys, then the NSS estimates of AMR (1470 in rural and 735 in urban areas) appear very close to those provided by the NCAER(1991), NCAER(1992), Jalgaon, Bombay, and Madhya Pradesh surveys (1078 to 1296 in rural and 1148 to 1450 in urban areas).

Except for the Haryana and NCAER(1991) surveys, all the surveys reported the gender balance in the morbidity rate. In the Haryana survey, the higher morbidity among females was due to higher reporting of minor illnesses (aches and pains) as well as gynecological problems (irregular menses,

white discharge, etc.) among women in the age group. In contrast, in the NCAER(1991) standards reported more illnesses than females beautiformation was sought for only treated illn in a patriarchal society males are cared for than females, due to various economic and a factors.

With respect to age, the morbidity follow nonlinear J-shaped or flat U-shaped relation in all the reviewed surveys, implying that chi and the elderly are more susceptible to illness relationship between morbidity and SES i conclusive as each survey used different indica for measuring the SES of the household example, in the NSS(1992) the indicator us depict SES was the quintile of monthly per c consumer expenditure; in the NCAER(1991 indicator was income classes; in the NCAER(both income and caste indicators were use the Kerala, Bombay, Madhya Pradesh Bangladesh surveys three or more indicators as income, occupation, education, land owne assets, housing condition, etc.) were use construct the SES. These surveys also used v methods for computing scores from each ind to construct a composite index of SES. Overa AMR has shown some declining tendency wi rise in SES.

Similarly, the overall relationship between AM season does not show a clear pattern, bu prevalence of certain diseases such as dia malaria, cough and cold, shows some varia across seasons. Both the Haryana and Bangli surveys depicted a higher prevalence of dia among children during pre-monsoon and mor period, higher prevalence of skin diseases a monsoon, and cough and cold including fe the beginning of winter (November-Decen According to the NSS, malaria predominated a

Table 5: Annual Incidence of Morbidity, Its Differentials and Disease Pattern in the Selected Health Surveys by Area/Year of Survey

Morbidity	NSS Rural Urban 1986-87	NCAER* Rur Urb 1990	NCAER* Rural 1991	Kerala Rural 1987	Jalgaon 1987	Bombay City 1989	Madhya Pradesh 1990-91	Haryana Rural 1991	Bangladesh Rural 1978-79
1. Morbidity Incidence (I)/ Prevalence (P) Per 1000 Population	GJ 727 551 MH 946 273 TN 1399 771 UP 1406 699 WB 2440 1265 Five 1470 735 India NR NR	1348 1445 1837 1429 2681 1664 2008 2035 1760 1525 2060 1760	MP Gawatior 2052 Datia 2256 UP Mathura 2424 Hardoi 2280 RJ Alwar 780 Tonk 1788	Acute 5366 Chronic 138 Disability 13	Rural 1168(I) 1856(P) Urban 1148 (I) 1702 (P) R+U 1159 (I) 1787 (P) Chronic 47 Disability 6	Short- Term 1592 Chronic 34 Catastro- phic 24	Rural 1830 Urban 2149 R+U 1946 Chronic 128 Disability 20	Mothers 13251 Children 9192 Others 3338 All 6206	Mothers 9766 Children 14749 Others 6894 All 9035
2. Morbidity Differentials a. Male/ female ratio	1.03 0.92	1.70 1.90	MP:0.87, 0.95 UP:0.94, 1.41 RJ:1.10, 0.92	0.97	0.95	NR	Acute:1.21 Chro.:0.91	0.60	0.96
b. Age	J-shape J-shape	NR NR	NR NR	J-shape	J-shape	NR	All:1.06 J-shape	U-shape	U-shape
c. Socioeconomic status d.Season	Unclear Unclear Unclear High in Monsoon	Declines NR NR	Declines in MP & UP, Not RJ High in Summer in 3 Dist.	Declines NR	Rises High in Winter	High in Middle Class NR	Rises NR	High in Labor Class Unclear	Rises but nonlinear High in Monsoon
3. Disease	Infect. 31 24								
(% distribution)	Respir. 15 12 Circulat. 10 9 Digest. 6 7 Pregnancy Complic. 3 3 Injury 3 4 Other 22 27	Fever 44 44 Resp. 14 18 Dige. 15 12 Aches 8 9 Injury 4 4 Gyne. 3 2 Degen. 2 3	Fever 26-44 Cold 17-30 Diarrhea 7-16 Stomach 7-15 Aches 7-14 Oth inf. 2-12	Fever 55 Diarr. 10 Asthma 2 Allergy 1 Other 25	Infe. 33 Resp. 20 Dige. 13 Aches 9 Cardio. 7 Injury 2 Other 8	Fever 48 Cold 31 Oth Inf. 6 Aches 5 Stomach 4 Injury 4 Skin 2	Infe. & Fever 54 Resp. 21 Dige. 11 Skin 4 Aches 3 Injury 2 Other 5	Fever 31 Resp. 16 Diges. 13 Skin 13 Gyne. 11 Preg. 3	Resp. 43 Diarr. 25 Skin 8 Eye-Ear Inf 6 Oth Infe. 3 Other 15

In both the NCAER surveys, morbidity rates include all long standing chronic diseases. GJ-Gujarat, MH-Maharashtra, MP-Madhya Pradesh, RJ-Rajasthan, TN-Tamil Nadu, UP-Uttar Pradesh, WB-West Bengal. NR-Not Reported.

the monsoon season (July-September).

The Haryana and Bangladesh surveys, through many repeat visits, reported the highest level of morbidity. The reported morbidity was highest among children and mothers, with mothers being the main informants for themselves as well as for children. Also, in repeat visit surveys (Haryana and Bangladesh), the interviewers try to establish a good rapport with the households; when both the interviewer and interviewee are female, this rapport acts as a stimulus to record minor illnesses as well as those related to gynecological problems better. Furthermore, as discussed earlier, the AMR is

influenced by the magnitude of recording more than one episode of illness per ill person, and by distinguishing between multiple diseases or reoccurrence of the same disease during a particular spell of illness.

Overall illness reporting by respondents in developing countries is relatively simpler than reporting the type of illness. The underlying reasons are that many acute illnesses are symptom based; for several minor illnesses treatment is not sought; there is a tendency to forget, or not know, the nature of disease despite having sought treatment; and for most of the treated illnesses relating to

infectious and parasitic diseases, the providers prescribe and dispense medicines on an a priori based physical checkup (depending on their professional experience) rather than based on clinical diagnosis of symptoms. As a result, the disease-specific prevalence rate based on the self-perceived approach may be quite arbitrary. A broader classification of diseases based on various physiological systems as suggested by WHO (1977) is more reliable.

Of the nine reviewed surveys, six used a pre-coded disease list; the number of listed diseases varied from nine in the Bombay survey to 50 in the NSS. The NCAER (1992) survey categorized the nature of illness into 28 symptoms and disease or disease groups without mentioning whether the illness was diagnosed; as a result, for most acute illnesses the disease grouping is very arbitrary. Also, delivery was considered as a disease and listed under gynecological problems (a practice also followed by the Haryana survey). In the NSS survey, as mentioned earlier, utilization information was collected only if medical advice and facility was sought, suggesting that the reported ailments were mostly diagnosed per se. A pre-coded list of fifty most prevalent diseases (both chronic and acute), including injury, was used; all other diagnosed diseases not mentioned in the list, as well as other undiagnosed illnesses, were given separate codes. Injury was rather considered as a group caused by many factors such as fall, drowning, fire, motor vehicle collision, self-infliction and violence. In the Bangladesh survey, the list of 14 diseases contained only childhood diseases such as diarrhea, dysentery, measles, mumps, chicken pox, scabies, and malnutrition, and did not consider injury and chronic diseases. On the other hand, the Kerala survey separately listed 19 acute and 12 chronic diseases, but the lists were not mutually exclusive (6 out of 12 chronic diseases, such as filaria, asthma,

high/low blood pressure, heart attack, diabetes: goiter, were also included in the list for ac diseases). There may be double counting for s diseases in estimating the overall morbidity ra

The three remaining surveys (Jalgaon, Mad Pradesh and Haryana) did not use a pre-coded In the Jalgaon and Madhya Pradesh surveys, nature of illness was coded afterward on the b of reported symptoms and diseases associated a particular physiological system; for insta cough and cold were coded as symptoms, asthma as a disease, associated with the respira system. However, this classification was followed strictly. It was dominated by type symptoms rather than disease; to our surp surgery and handicaps were classified as one of illness; and no clear distinction was n between acute and chronic diseases. In the Bor survey also, there was a great degree of ove between chronic and catastrophic diseases, both surgery and delivery were considered as type of catastrophic illness. Only the Visaria Gumber (1994) study, while re-tabulating the (1992) data for five states, adopted a system distribution of diseases based on physiolc systems as suggested by WHO (1977).

It is clear from Table 5 that most of the su (except the NSS) were not able to record diagnosed diseases. In their disease distributed fever accounted for an overwhelming majest followed by cough and cold and 'others' (incl. those not mentioned in the list, unclassified not recorded). Despite using a pre-coded list diseases in the NSS, one-fifth of all diseases enumerated as 'other diagnosed' and only percent were 'undiagnosed'. This could be bethe NSS did not consider 'fever' (mostly unclaim nature) in its disease list, while in other suit was considered to be the most imposition.

symptom/disease. Furthermore, unlike the NSS, some surveys' "aches and pains" also formed an important category in the disease pattern which varied between 5 and 14 percent. The NCAER (1992) survey atypically classified all types of skin diseases under "aches and pains" and considered ulcer one of the skin diseases. In the Kerala survey, which reported the second highest morbidity rate, 80 percent of acute and 44 percent of chronic illnesses could not be classified; probably both the interviewees and interviewers were quite enthusiastic and concerned about reporting even trivial health problems. In the Haryana survey (which reported the highest morbidity rate), gynecological problems including pregnancy were the third largest disease group after fever and respiratory infections.

Overall, if we associate fever with infectious diseases and ignore the category "others," then the disease pattern in order of importance emerges as follows: infectious diseases including diarrhea, diseases of respiratory system, diseases of digestive system, skin diseases, diseases of circulatory system, aches and pains, and injury. As shown in Figure 5, the first three groups accounted for between 65 percent and 89 percent of all acute illnesses.⁶

The share of untreated illnesses (as shown in Figure 5 and Table 6) varied between a low of three percent in NCAER (1990) and a high of 48 percent in the Haryana survey. For comparison, untreated illness is defined here as an illness receiving no care, including self-medication and home remedy. Its share was about 14 percent in the NSS. However, the share varied inversely with the size of habitation (from 16 percent in villages and towns with under 50,000 population to 3 percent in cities with population of 200,000 and more) and with socioeconomic status, suggesting improved utilization due to better purchasing power and

greater proximity to health services.

The NSS and NCAER (1992) surveys did collect information about the associated reasons for non-treatment, but the latter did not analyze the information. According to the NSS, "the ailment perceived to be not serious" and "financial problem" were the two most important reasons for non-treatment, respectively accounting for 50 and 25 percent of such cases, respectively. The latter reason was equally important among poor households, whereas "distance" and "long waiting period" were least cited by the respondents (Visaria and Gumber 1994: 64).

Public providers of healthcare include government hospitals, clinics, dispensaries, PHCs and community health centers, the central and state governments assisted ESI hospitals and dispensaries (covered under Employees' State Insurance Scheme), and charitable institutions. The rest of providers fall into the "private" sector, which is much more diversified in terms of profession as well as spatial distribution. All the reviewed surveys highlighted a much greater use of private facilities for the treatment of acute illnesses in both rural and urban areas. It is often argued that where the public sector failed, the private sector has flourished in meeting the demand for health care, particularly in rural areas. However, the reliance on the public sector is much greater for severe illnesses requiring hospitalization. Also, for particular diseases such as tuberculosis and skin disease, the outpatient treatment is higher in the public than in the private sector. Furthermore, the reliance on a public provider is higher among poor households and declines with rising socioeconomic status. The underlying reasons for such patterns are consideration of price, which is generally higher in the private than public sector; the fact that medical services in the government hospitals are available around the clock and are usually equipped with diversified services including surgery, orthopedics and blood banks, which private hospitals may lack; and the general tendency of private providers not to deal with or refer seriously ill patients to public hospitals (Visaria and Gumber 1994; Gumber 1994).

Except for the NSS, data on the cost of treatment also includes indirect costs such as expenditure on

transportation, special diet, rituals, gifts and tips. The share of indirect cost was relatively small; compared to the amount paid to the provide including medicines: the latter accounted for two thirds to nearly 93 percent of the total cost. The treatment cost for acute illness varied from as litt as Rs.17 in rural Kerala to as much as Rs.186. Rajasthan; for chronic and catastrophic illness requiring hospitalization, the cost was much high-(varying between Rs.640 and Rs.1644). In the

Table 6 Main Results on Utilization and Cost of Treatment in the Selected Health Surveys by Area/Year of Survey

Utilization	NSS Rural Urban 1986-87	NCAER Rural Urban 1990	NCAER Rural 1991	Kerala Rural 1987	Jalgaon 1987	Bombay City 1989
1. Untreated Illness including Self-medication (%) and by SES	16 11 Declines by SES	2.4 4.7 Rises by SES	5-14 Declines in 3 Dist.	12 Rises with SES	Rur:13.7 Urb: 8.3 Declines	Short-term Chronic 6.1 Declines
2. Hospitalisation (%)	1 1.5	NR	NR	NR	Rur: 3 Urb: 3.9	1.3
3. Share of Public Provider in Treatment(%) and by SES	Inpatient 62 63 Outpatient 19 24 Declinesby SES	52 40 Declines by SES	MP 14, 12 UP 13, 13 RJ 51, 86	Declines by	Rur: 12 Urb: 18 Declines	Short-term Chronic 32 Catastrophic 47
4. Cost of Treatment Av. Cost (Rs.) Pvt/Public Ratio	Inpat. 640 1053 Ooutpat. 71 90 Rises by SES	152 143 Rises by SES	MP 147, 129 UP 128, 97 RJ 186, 152 MP 1.17, 0.93	17 Rises steeply by SES NR	Rur: 104 Urb: 100 Rises steeply	Short-term Chronic 59 Catastrophic 1644 Rises NR
Medical Cost as % of Total	Outpat 1.32 1.51	•	UP 1.98, 1.42 RJ 1.04, 1.76 MP 75,81 UP 76, 67 RJ 69, 71	67	87	Short-term Chronic 90 Catastrophic

GJ-Gujarat, MH-Maharashtra, MP-Madhya Pradesh, RJ-Rajasthan, TN-Tamil Nadu, UP-Uttar Pradesh, WB-West Bengal. NR-N Reported. SES means socioeconomic status.

^{6.} The former figure, for the NSS, was low because it considered only those illnesses/diseases for which treatment was soug if we distribute such untreated cases proportionately, the percentage increases from 65 to 76.

majority of cases, the private provider charged more than the public provider, and the difference was greater for inpatient treatment. For instance, according to the NSS, the average cost of treatment involving hospitalization in the private sector was 150 percent higher than the public sector in rural areas and 350 percent higher than in urban areas; it was 50 percent higher in cases not requiring hospitalization (Gumber 1994).

Besides the price differential between public and private providers, the multivariate analysis of the determinants of cost of treatment, attempted on the NSS and NCAER (1991) data respectively by Visaria and Gumber (1994) and Deolalikar and Vashishtha (1992), suggests that socioeconomic status, sociodemographic characteristics of the patient, type of disease, duration of treatment and type of service-mix used are the other important factors in explaining the variation in the cost of treatment and to some extent the price elasticities as well.

Financial burden on the households for the treatment of illness depends upon health insurance coverage, cost of treatment by provider and monthly total or per capita household income or expenditure budget. No doubt, the out-of-pocket expenses for treatment are much smaller for the nsured than the non-insured patients, and hence also the relative financial burden on households. But in India, health insurance coverage is limited o only the central and state government employees nd employees of the organized industrial sector, which constitutes a very small segment of the opulation. Only three reviewed surveys collected ome information on this crucial subject. According the NSS, only about 8 and 17 percent of inpatients h rural and urban areas, respectively, were covered nder some health insurance scheme; the orresponding percentages for outpatients were 3 and 6 (Gumber,1994). In the Jalgaon survey only a couple of patients had health insurance coverage, whereas in the Bombay survey such coverage was as high as 28 percent, because Bombay is the most industrialized and urbanized metropolis of India.

Only four surveys—NSS (1992), Madhya Pradesh, Jalgaon and Kerala—provided an estimate for the annual per capita expenditure on health; for the other three surveys—NCAER (1991), NCAER (1992) and Bombay-we estimated it by multiplying the average cost of treatment by the annual prevalence rate. Similarly, the share of health expenditure to total expenditure or income was only provided by the Madhya Pradesh, Jalgaon and Kerala surveys; for the remaining four surveys it was indirectly calculated. Figure 6 shows that unlike the annual morbidity rate, the variation in the annual per capita health expenditure across the reviewed surveys was relatively small (it ranged between Rs.178 and Rs.299). The proportion of health expenditure to total expenditure or income varied between 5 (Bombay survey) and 15 percent (NCAER 1991). The figure for Bombay survey was low, in both absolute and relative terms, due to relatively high levels of insurance coverage and high cost of living among the population. The NSS figures of Rs.248 as the annual per capita health expenditure and 5.7 as the percentage to total expenditure indicate some kind of an overall average. The latter estimate is much closer to that of 6.0 in 1990 provided by the World Bank, 1993.

In absolute terms the health expenditure was higher in rural than in urban areas and increased with the rise in socioeconomic status; however, in relative terms (i.e., the health expenditure as a percentage of total expenditure) the pattern was the other way round, with the poor households in rural areas spending a higher multiple of their incomes and hence bearing the highest financial burden of treatment. If we restrict the analysis to only the illness-reporting households and make further a distinction between illness requiring and not requiring hospitalization, the burden increases considerably. According to the NSS the financial burden on rural and urban households in the case of hospitalization was 83 and 92 percent of the total monthly household expenditure (MTHE), and 702 and 516 percent of the monthly per capita expenditure (MPCE). The burden was relatively small for illnesses not requiring hospitalization and did not exceed 10 percent of monthly household expenditure and 63 percent of monthly per capita expenditure. Multivariate analysis suggested that the financial burden on households was much higher if the patient was treated in a private sector institution, had no insurance coverage, had undergone a longer duration of treatment, was treated for injury, belonged to a lower socioeconomic status and was the resident either of a highly urbanized zone or a city with one million or more population (Gumber 1994).

Conclusion

Disease is increasingly recognized as both a significant indicator of human well-being and a determinant of poverty. Public action to improve the quality of life includes significant attention to reducing the burden of disease on the population. In India, a sizable portion of this burden is amenable to affordable, cost-effective intervention.

Valid and reliable estimates of disease rates, their determinants, and the human behavioral response to them are needed to design effective action and to improve our understanding of the effects of disease on human welfare. Health interview surveys are a feasible and affordable tool for such measurements on a large scale. Health interview surveys provide population based estimates of "morbidity", the rates of disease and disability

incidence and prevalence. However, such surverely heavily on respondents' own reports of illrand its effects. Illness is a highly subject phenomenon. International experience shows self-reported illness rates are highly correlated vindividual and social characteristics and may variety from disease rates estimated based clinical examination methods. Morbidity has proto be a complex concept that is difficult characterize and define precisely for purposed large-scale measurement. Since morbidity questi are typically the filters used in surveys for a hose health behavior related queries, difficulties in the measurement constrain the study of a number elated phenomena.

So far, three approaches have been used to e information on disease prevalence or burden community: health services utilization, s perceived morbidity, and observed (clinic assessed) morbidity. No doubt the obsermorbidity approach has an edge over the or two, but it is costlier and more time consumir. the population coverage is large and widely spre The morbidity estimates based on the utiliza approach are biased and do not include illne: left untreated, or those treated through s medication and home remedy. Therefore, n health surveys in developing countries adopted self-perceived approach, based on pain : suffering perceived and reported by individu All nine reviewed surveys used this approx though they did not include reliability and vali checks of illness reporting. Indeed, such che particularly in a large scale health survey, mus considered to obtain more accurate estimates morbidity.

The results of these surveys show quite la variations in reported rates of illness overall, r for specific causes, frequency and pattern of he care use, and levels of health expenditure. Variation in these indicators is not surprising in itself. We would expect differences in rural and urban illness rates, cause-specific differences by region, age, sex, and socioeconomic class, but the size of the differences, as well as their direction, is in many cases surprising. Overall, this suggests that there is a high degree of unreliability in such surveys. While they are used as the "best available" information, the increasing interest in health issues demands that more efforts be made to improve and standardize measurements both for intervention design as well as for monitoring and evaluation of health programs.

The nine surveys reviewed vary substantially in the methods used, including health problems addressed, survey design, definition and instruments used to measure morbidity, health care use, spending, and measurement of associated factors. There is much to be learned from these experiences that could improve future studies both at the state and national levels. It is our view that substantial improvements in strategy and methods for such studies are essential to get the most out of these investments. Specifically, we feel that attention must be given to the following improvements:

1. Clarify definitions and classification of illness and disease. Surveys use different terms and categories to organize reports of illness. These include terms referring to symptoms, symptom clusters, and clinical diseases. Each survey does this differently, making comparisons very difficult. In addition, it is not clear to what extent these terms and classifications apply consistently in one survey undertaken in many different parts of the country. For example, does a respondent in Kerala who reports "typhoid" mean the same thing as one in Haryana? Finally, efforts must be made to link

reported illness with clinically verified disease status in order to have some gauge of the differences in these measures.

- 2. Regularize use of proxy respondents. Some surveys interview all adult household members, others only household "heads" or available adults. What difference does this make? Who should report on children?
- 3. Regularize recall period. Surveys on utilization of health services have used varied length of recall period. The international experience shows that a recall period of two weeks for short-term or acute illness reporting is the most appropriate, while for long-term or chronic illness it should be three or more months but preferably less than six months (see Kroeger 1983; 1985; 1989; Ross and Vaughan 1986).
- 4. Measure chronic conditions and disabilities. Surveys have been much more focussed on acute conditions than on chronic conditions, and little effort has been made to appropriately measure the functional implications of illness. This is an important new area for research, one which can help improve understanding of the poverty effects of illness.
- 5. Standardize instruments for measuring healthcare use and expenditure. Methods for measurement of these responses to illness have been highly variable and often inadequate. No national survey has measured the role of non-qualified private practitioners, although smaller studies suggest that they account for the vast majority of ambulatory treatment of illness. Surveys may significantly underestimate the frequency of use and associated cost of healthcare by limiting respondent choices and by poor use of terminology. It is unclear to what extent national surveys

adequately capture variations across regions and between rural and urban areas in types of healthcare providers.

6. Equity consideration. A very few surveys have adequately addressed equity issues. Surveys should not limit the focus just to physical accessibility of health services but also include parameters of its affordability, financial burden and sources of healthcare financing available to the health seekers.

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