PATTERN OF HEALTH CARE UTILIZATION AND DETERMINANTS OF CARE-SEEKING FROM GPs IN TWO DISTRICTS OF PAKISTAN

Naveed Z Janjua[1, 2], Mohammad I Khan[1], Hussain R Usman[2], Iqbal Azam[1], Moazzam Khalil[3] and Khabir Ahmad[4]

[1]Department of Community Health Sciences, Aga Khan University, Pakistan; [2]Department of Epidemiology, University of Alabama at Birmingham, AL, USA; [3]National Commission of Human Development, Islamabad, Pakistan; [4]Department of Surgery, Aga Khan University, Pakistan

Abstract. The aims of the study were to describe the pattern of health care utilization and out-of-pocket expenses incurred in seeking health care, and to identify the determinants of care-seeking from private general practitioners (GP) in two districts of Pakistan. During July-September 2001, we conducted a cross-sectional study in two districts in the Sindh Province of Pakistan. We selected 1,150 participants age ≥ 3 months through a two-stage cluster sampling technique. Information was collected about contacts with healthcare providers during the past three months, presenting complaints, type of treatment received, and cost of the latest visit. Of 1,150 participants, 967 (84%) had at least one contact with health care providers during past three months. The mean number of contacts was 1.7. Most of the contacts (66.8%) were with private GPs. The average cost per visit was Pak Rs 106 (US$ 1.7) and Rs 38 (US$ 0.6) for GPs and public sector providers, respectively. A multiple logistic regression model revealed those living in urban areas, with monthly household income >Rs 2,500 (US$ 39.7), an education level >5 years, and who received both injections and oral drugs were more likely to visit private general practitioners.

INTRODUCTION

South Asia has some of the worst health indicators in the world because much of its population lacks access to even the most basic health care. An estimated 4 million children under 5 in the region die each year mainly due to avoidable conditions, such as diarrhea, pneumonia, and measles (Black *et al,* 2003). Out of half a million maternal deaths in the world each year, nearly half occur in South and Southeast Asia (Bhutta *et al,* 2004).

Correspondence: Naveed Zafar Janjua, 1665 University Blvd, RPHB 430, Birmingham, AL 35294, USA.
Tel: 502-975-7690; Fax: 502-934-7154
E-mail: naveed@uab.edu

It is estimated that 62% of all disability-adjusted life years (DALYS) lost and 83% of its top ten causes in developing countries can be addressed in ambulatory settings through the use of simple and cost-effective interventions (Murray and Lopez, 1996; Berman, 2000). In much of the region, including Pakistan, a large proportion of the curative ambulatory health care is provided by the private sector, whereas preventive services (such as immunization) and secondary and tertiary health care services are provided by the public sector. However, there is a growing body of scientific evidence that the private sector is plagued with the problem of over-prescription of drugs and unnecessary use of therapeutic injections (Greenhalgh, 1987; Thaver *et al,* 1998; Simonsen *et al,* 1999; Janjua *et al,*

2005). Unnecessary spending on health care offered by the private sector has been shown to divert resources away from important public health areas, such as nutrition and education (Murray and Lopez, 1996; Berman, 2000; Mills *et al,* 2002). Despite the seriousness of the situation in Pakistan (a country with a population of 150 million), there is a lack of data on the current patterns of health care utilization. The objectives of the present study were to describe the pattern of health care utilization and out-of-pocket expenses incurred in seeking health care, and to identify the determinants of care-seeking from private general practi] oners (GP) in two districts of Pakistan.

MATERIALS AND METHODS

Setting

The data were collected through a population-based cross-sectional study during July- September 2001 in an urban and a rural setting in Pakistan's Sindh Province. We selected Lyari, an urban town in Karachi (Pakistan's largest city) because of its ethnically diverse population. Populations representing all major ethnic groups in Pakistan, including Baloch, Punjabi, Mohajir, Pakhtoon and Sindhi, live in Lyari, which has a population of more than 600,000 people with an average household size of 6.5 persons and a literacy rate of 67% (Population Census Organization 2000a). Health care is provided by public health care facilities, private general practitioners (GP) and private dispensers. The later are not legally allowed to practice medicine. By contrast, Digri is a rural area in Mirpur Khas District. It is located about 300 km east of Karachi and is comprised of 294,000 people of Sindhi, Punjabi and Balochi ethnic descent living in scattered small villages. Its literacy rate (29%) is lower than Lyari, and agriculture is the primary source of income (Population Census Organization, 2000b). People seek health care from few qualified physicians at the state-run Basic Health Units (BHUs), private dispensers and private GPs.

Design

Study participants included all those who were at least 3 months old and who had been living in the selected areas for the last 3 months. Participants were selected through cluster-sampling technique. A cluster was defined as a group of people living within specific administrative boundaries. These clearly-demarcated areas are called "sectors" in Lyari, and "deh" in Digri, as defined by the government. A household, which was defined as a group of people living together and sharing the same kitchen (Bennett *et al,* 1991), was taken as a sampling unit while a randomly selected individual from within that household was a sampling element. Thirty-four clusters (17 each from rural and urban settings) were selected using the probability proportional to the population size method. On average, 34 households were selected from each cluster. In each cluster, a central point was located. The first house in each cluster was selected by the direction in which the bottle stopped spinning. The next house was selected systematically using a sampling interval which had been calculated by dividing the total number of households in the cluster by 34 (Bennett *et al,* 1991). In each selected household, one person was drawn randomly from those present at the time of visit by the interviewing team. We selected a total of 1,150 participants.

Trained interviewers collected data on socio-demographic factors and the number of encounters with healthcare providers during last three months. For each encounter, data were collected on the presenting complaints, type of health care providers and type of medications prescribed. Information about the amount of money paid by the patient to the provider was collected only for the most recent visit. For participants less than 15 years of age, adult caretakers were interviewed.

Questionnaires were translated into Urdu for urban areas and Sindhi in rural areas; these are the major languages of interaction between the various ethnic groups.

A health care provider, whether a physician or a dispenser, working in a public sector was defined as a public provider, whereas a health care provider, whether a physician, dispenser or any other primary health care worker running a clinic/hospital in the private sector, was defined as a private provider (Hanson and Berman, 1998). A private provider with MBBS or higher qualification was called a GP. To assess the identity of the providers, we first asked study participants to provide the name of the provider from whom they had sought medical care. We confirmed the type of provider from the drug stores in the area and from the community workers and recorded it accordingly. The Ethics Review Committee of the Aga Khan University, Pakistan approved the study. We explained the purpose of the study to participants and obtained informed verbal consent.

Statistical analysis

Data were double entered using Epi-Info software, version 6.04 (Centers for Disease Control and Prevention, Atlanta, GA) and analyzed using the Statistical Package for Social Sciences (SPSS) version 10.0 (SPSS, Chicago, Illinois) and SAS Version 8.2. We calculated rate ratios for the selected variables through Poisson regression using the number of visits to health care providers as a dependent variable. To account for the varying probabilities of subject selection within clusters we adjusted the estimates of health care use with weights [(number of subjects selected from a cluster/cluster population size)* population of the town/sub-district]. The cost of the most recent visit to the health provider, included consultation fee, cost of drugs and injection was recorded. Our cost variable did not include travel or time cost. Unadjusted odds ratios and their 95% confidence intervals (CI) were calculated for determinants of visiting a private GP. A binary response variable was created by specifying utilization of health care by the GP during the latest visit as "1" and all other providers as "0". Multivariable logistic regression analysis was performed to identify factors associated with the use of health care from the GPs.

RESULTS

We selected a total of 1,150 individuals, 575 from the urban and 575 from the rural setting. The mean (± SD) age of the study participants was 25±18 years, while the median age was 27 years. Eight hundred seventy-three (75.9%) of them were women. The median and the mean (± SD) monthly household incomes were Pak rupees 4,000 (US$ 63) and 4,825 (US$74) ± 3,538, respectively (Table 1).

Distribution of visits to the health care facility

Nine hundred sixty-seven (84.1%) participants reported having had at least one visit to health care providers during past three months. The primary reason for consultation in 82% (851/1,150) of participants was different ailments. Only 2% (116/1,150) of subjects visited for vaccinations. Four hundred forty-three (38.1%) subjects had one encounter, while 258 (22.4%), 159 (13.8%) and 106 (9.2%) had two, three and more than three encounters, respectively. The total number of contacts was 3,680, with a mean (±SD) of 1.67 (±1.33) and median of 1.00. For those who had a contact with a health care provider, the mean (SD) and median number of visits were 1.98 (±1.22) and 2.00. The mean (±SD) number of contacts in the urban area [2.2 (± 1.52)] was higher than those in the rural area (1.19± 0.87, rate ratio = 1.72, 95% CI: 1.57, 1.89). Participants age less than 5 years were more likely to visit health care providers as compared with their counterparts age 5 years and above (rate ratio=1.29 95% CI: 1.10,1.51). The mean number of visits varied widely among different ethnic groups (Table 2).

Table 1
Distribution of socio-demographic characteristics of study participants from urban and rural areas (Sindh Province, Pakistan).

	Variables	Urban n (%)	Rural n (%)	Total n (%)
Gender	Female	441 (76.7)	432 (75.1)	873 (75.9)
	Male	134 (23.3)	143 (24.9)	277 (24.1)
Age in years	1/4 -5	116 (20.2)	79 (13.7)	195 (17.0)
	6-14	65 (11.3)	34 (5.9)	99 (8.6)
	15-45	331 (57.6)	361 (62.8)	692 (60.2)
	> 45	63 (11.0)	101 (17.6)	164 (14.3)
Years of formal schooling	0	321 (55.8)	424 (73.7)	745 (64.8)
	1-5	119 (20.7)	64 (11.1)	183 (15.9)
	6-10	104 (18.1)	59 (10.3)	163 (14.2)
	>10	31 (5.4)	28 (4.9)	59 (5.1)
Ethnicity	Mohajir[a]	94 (16.3)	26 (4.5)	120 (10.4)
	Sindhi	37 (6.4)	343 (59.6)	380 (33.0)
	Punjabi	130 (22.6)	203 (35.3)	333 (28.9)
	Pukhtoon	55 (9.5)	2 (0.3)	57 (4.9)
	Baloch	259 (45.0)	1 (0.2)	260 (22.6)
Occupation	Housewife/unemployed	338 (58.9)	304 (53.1)	642 (56.0)
	Public servant	7 (1.2)	17 (3.0)	24 (2.4)
	Business	21 (3.7)	30 (5.2)	51 (4.4)
	Employed in private firm	27 (4.7)	102 (17.8)	129 (11.2)
	Student	181 (31.5)	120 (20.9)	301 (26.2)
Ownership of house	Owned	474 (82.4)	495 (86.6)	969 (84.5)
	Rented	95 (16.5)	6 (1.0)	101 (8.8)
	Employer's house	6 (1.0)	71 (12.4)	77 (6.7)
Monthly household income (Rs)[b]	≤ 2,500	88 (15.3)	221 (38.5)	309 (26.9)
	2,501-4,000	223 (38.9)	119 (20.7)	342 (29.8)
	4,001-6,000	153 (26.7)	88 (15.3)	241 (21.0)
	> 6,000	110 (19.2)	146 (25.4)	256 (22.3

[a]Includes Kachi, Memon and Gujrati. These are grouped together as all of these originated from parts of India not presently included in Pakistan.
[b]Income in Pakistani rupee, Rs 63 = 1 US Dollar at the time of study.

Reasons for consultation

The reasons for consulting a health care provider included fever (27.8%), muscle/joint pain (15.4%), psychiatric ailments (9.2%), gastrointestinal disturbances excluding diarrhea (8.7%), cardiovascular ailments (7.1%), diarrhea (6.7%), sore throat/flu (5.4%), cough (4.7%) and other respiratory complaints (5.4%). A higher proportion of people in the rural area (37%) presented with fever than did their counterparts in the urban area (23%), whereas in the urban area a greater proportion (18%) of people presented with muscle and body pains than the rural area (11%).

Visits by provider type

Most (2,398, 66.9%) of the contacts were with GPs followed by private dispensers (514, 14.3%) and public physicians (261, 7.3%, Fig 1). A higher proportion of visits by men and women in both urban and rural areas were to

Table 2
Comparison of number of contacts with health care providers shown by Poisson regression rate ratios and their 95% CIs (Sindh Province, Pakistan).

	Variables	n	Mean number of contacts	SD	Rate ratio	95% CIs
Area of residence	Urban	575	2.2	1.5	1.72	(1.57, 1.89)
	Rural	575	1.2	0.9	1.00	
Gender	Female	872	1.7	1.3	1.05	(0.94, 1.17)
	Male	277	1.6	1.3	1.00	
Age in years	1/4 -5	195	2.0	1.4	1.29	(1.10, 1.51)
	6-14	99	1.8	1.4	1.14	(0.93, 1.38)
	15-45	692	1.6	1.3	1.01	(0.88, 1.17)
	> 45	164	1.5	1.2	1.00	
Ethnicity	Mohajir	120	1.7	1.4	1.00	
	Sindhi	380	1.3	1.0	0.79	(0.67, 0.94)
	Punjabi	333	1.6	1.5	0.91	(0.77, 1.07)
	Pukhtoon	57	2.1	1.2	1.24	(0.99, 1.56)
	Baloch	260	2.2	1.4	1.30	(1.10, 1.53)
Years of formal schooling	0	745	1.7	1.3	1.02	(0.83, 1.26)
	1-5	183	1.7	1.5	1.05	(0.83, 1.33)
	6-10	163	1.7	1.4	1.02	(0.80, 1.29)
	>10	59	1.6	1.4	1.00	
Monthly household income (Rs)	≤ 2,500	309	1.5	1.2	1.00	
	2,501-4,000	342	1.8	1.4	1.21	(1.07, 1.23)
	4,001-6,000	241	1.8	1.4	1.20	(1.05, 1.37)
	> 6,000	256	1.6	1.3	1.07	(0.94, 1.37)

SD = Standard deviation, CI= Confidence Interval.

Table 3
Distribution of visits to different types of health care providers by area and gender (Sindh Province, Pakistan 2001)[a].

Providers	Urban Visits = 2,160				Rural Visits = 1,520			
	Females		Male		Females		Male	
	Visits	(%)	visits	(%)	Visits	(%)	visits	(%)
Public sector physician	182	(10.8)	63	(13.3)	185	(15.8)	14	(4.0)
Private GP	1,231	(73.0)	372	(78.5)	608	(51.9)	184	(52.9)
Public dispenser	7	(0.4)	0	(0.0)	173	(14.8)	82	(23.6)
Private dispenser	225	(13.3)	32	(6.8)	196	(16.7)	61	(17.5)
Homeopath/hakims[b]	28	(1.7)	5	(1.1)	2	(0.2)	1	(0.3)
Drug store keeper[c]	13	(0.8)	2	(0.4)	8	(0.7)	6	(1.7)
Total visits	1,686		474		1,172		348	

[a]Analysis adjusted for design by applying weights; [b]Practicing traditional medicine; [c]Drug store keeper is person working at drug store.

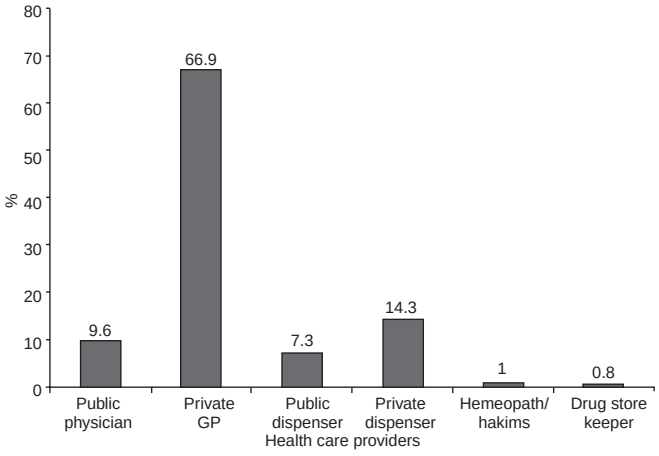

Fig 1–Type of health care provider visited by study participants in a health care utilization study in Sindh Province, Pakistan 2001.

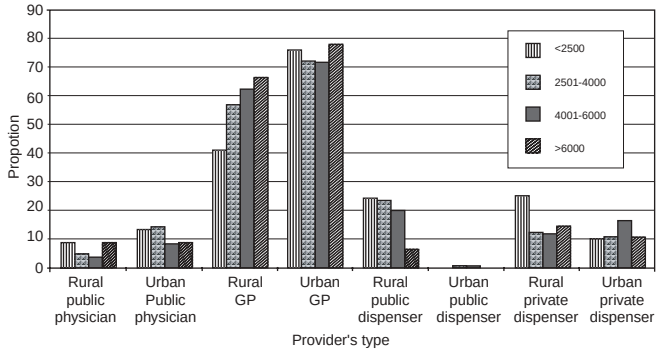

Fig 2–Type of provider utilized by different income groups in rural and urban areas, in a health care utilization study Sindh Province, Pakistan, 2001 (Chemists and hakims were excluded due to small numbers).

GPs. Very few (0.4%) contacts of women in urban areas were with public dispensers, compared to those in rural area (14.8%) (Table 3).

Stratification of visits by income groups and area of dwelling (rural and urban) revealed that in urban areas people with lower monthly household incomes (< Rs 4,000) were more likely to visit public physicians than their counterparts with higher income. The majority (78%) of those with a higher household income reported visiting private GPs. In rural areas, the proportion of those consulting private GPs increased with income (χ^2 for linear trend = 30.24, p< 0.001) whereas visits to public (χ^2 for linear trend = 3.1, p < 0.08) and private dispensers (χ^2 for linear trend = 9.14, p = 0.003) decreased with increasing income (Fig 2).

Cost of care

The median amount paid to seek care for a most recent contact with a health care provider was Rs 30. The median amount paid was higher in the rural area (Rs 50) than the urban area (Rs 25; Mann-Whitney *U*, p<0.001). The amount paid for receiving health care also varied significantly by income groups (Kruskal Wallis test p<0.001) and by age groups (Kruskal Wallis test, p = 0.002, Table 4). The median amount paid to private GPs and private dispensers (Rs 40) was higher than the amount paid to public physicians and dispensers (Rs 5, Kruskal Wallis test, p< 0.001).

Determinants of care-seeking from GPs

A multivariable logistic regression model constructed from variables identified in univariate analysis revealed the area of dwelling, educational status, ethnicity, monthly household income and type of medication prescribed were significantly associated with seeking care from a private GP (Tables 5 and 6). We evaluated the effect of distance from the health care facility on utilization separately for urban and rural areas. The model for the rural area showed that those living within 7 km of a GP clinic were more likely (adjusted OR= 2.2, 95% CI: 1.1, 4.6) to seek care from a GP than those living 7-16 km away. Distance from a public facility did not influence care-seeking from GPs. However, in the model for urban area distance from a GP clinic was not associated with choice of general practitioner.

Table 4
Comparison of cost of seeking care from a health care provider by study participants (Sindh Province, Pakistan).

	Variable	n	Median	p-value[a]
Area	Urban	461	25	<0.001
	Rural	333	50	
Gender	Female	600	30	0.33
	Male	193	35	
Monthly household income (Rs)	< 2,500	187	40	<0.001
	2,501-4,000	247	28	
	4,001-6,000	174	30	
	> 6,000	184	50	
Age in years	< 5	147	25	0.002
	6-14	74	30	
	15-45	456	40	
	> 45	117	40	
Years of formal schooling	0	515	35	0.004
	1-5	118	28	
	6-10	120	30	
	>10	41	50	
Ethnicity	Mohajir	82	30	<0.001
	Sindhi	231	50	
	Punjabi	217	40	
	Pukhtooon	53	25	
	Baloch	211	25	
Type of provider	Public sector physician	65	5	<0.001
	Private GP	566	40	
	Public dispenser	12	5	
	Private dispenser	130	40	
	Homeopath/hakims[b]	10	18	

[a]Kruskal Wallis test; [b]Practicing traditional medicine.

DISCUSSION

The rate of health care utilization during the 3 months of our study (84%) was one of the highest reported worldwide. In neighboring India, the rates were 86% and 84% at 6 months and 1 year, respectively, which are much longer periods (Vissandjee *et al,* 1997; Bhatia and Cleland, 2001). In Vietnam, 34% of people visited a health care provider during previous four weeks, but visits to purchase drugs dispensed were also included (Ha *et al,* 2002). There are two possible explanations for the substantially higher rates observed in our study. First, a greater proportion of people in the areas included in the study become sick during a given period of time than did people in other parts of Pakistan, or other countries of the world. This explanation is supported by a recent report that shows the prevalence of self-perceived health in Pakistan, especially amongst women, is one of the worst reported (Ahmad *et al,* 2005). Second, the people we included in the study may have been more health-conscious, resulting in a higher rate of visiting health care providers. More people vis-

Table 5
Association of factors with visit to private general practitioners shown by crude odds ratio and their 95% CIs (Sindh Province, Pakistan).

	Variables	Not visited GP	Visited GP	OR	95% CIs
Area	Rural	226	248	1.00	
	Urban	143	349	2.22	(1.71, 2.90)
Gender	Female	287	445	1.00	
	Male	82	151	1.19	(0.87, 1.61)
Age in years	1/4-5	69	119	0.98	(0.62, 1.56)
	6-14	29	59	1.16	(0.66, 2.04)
	15-45	222	333	0.85	(0.58, 1.26)
	> 45	49	86	1.00	
Monthly household income (Rs)	< 2,500	132	122	1.00	
	2,501-4,000	103	189	1.99	(1.41, 2.80)
	4,001-6,000	73	132	1.96	(1.34, 2.85)
	> 6,000	61	152	2.70	(1.83, 3.97)
Years of formal schooling	0	269	370	1.00	
	1-5	54	92	1.24	(0.86, 1.80)
	6-10	37	98	1.93	(1.28, 2.90)
	> 10	9	37	2.99	(1.42, 6.30)
Ethnicity	Baloch	86	143	1.00	
	Mohajir	15	78	3.13	(1.69, 5.78)
	Sindhi	161	159	0.59	(0.42, 0.84)
	Punjabi	93	178	1.15	(0.80, 1.66)
	Pukhtoon	14	39	1.67	(0.86, 3.26)
Household density[a]	Quartile 1 (0.2 - 2.3)	59	134	1.50	(1.01, 2.24)
	Quartile 2 (2.5 - 3.5)	105	159	1.00	(0.71, 1.43)
	Quartile 3 (3.7 - 5.0)	98	132	0.89	(0.62, 1.28)
	Quartile 4 (5.3 - 15.0)	100	151	1.00	
Type of medication received during last visit	Oral	62	83	1.00	
	Injection only	76	12	0.12	(0.06, 0.24)
	Both oral and injection	225	499	1.66	(1.15, 2.39)
Presenting complaints	Fever	111	198	1.05	(0.65, 1.74)
	Sore throat, cough /flue	18	78	2.55	(1.31, 4.99)
	Cardiovascular ailments	12	37	1.82	(0.83, 3.97)
	Muscle and joint pains	57	85	0.88	(0.51, 1.52)
	Obstetric and gynecological	9	12	0.79	(0.30, 2.06)
	Diarrhea	19	42	1.30	(0.65, 2.60)
	Gastrointestinal ailments	21	56	1.57	(0.81, 3.04)
	Immunization	66	4	0.04	(0.01, 0.11)
	Psychiatric ailments	6	6	0.59	(0.18, 1.98)
	Respiratory ailments	17	23	0.80	(0.37, 1.71)
	Others	33	56	1.00	

[a]Number of persons in a house/ number of rooms.

Table 6
Multivariable logistic regression model of the factors associated with utilizing private general practitioners (Sindh Province, Pakistan).

	Variables	Adjusted OR	95% CIs
Area	Rural	1.00	
	Urban	2.20	(1.37, 3.52)
Years of formal schooling	0	1.00	
	1-5	1.04	(0.68, 1.60)
	6-10	1.52	(0.95, 2.43)
	>10	2.98	(1.28, 6.94)
Ethnicity	Baloch	1.00	
	Mohajir	4.91	(2.44, 9.90)
	Sindhi	1.41	(0.81, 2.46)
	Punjabi	1.78	(1.09, 2.92)
	Pukhtoon	1.89	(0.93, 3.84)
Monthly household income (Rs)	<2,500	1.00	
	2,501-4,000	1.54	(1.03, 2.29)
	4,001-6,000	1.57	(1.00, 2.44)
	>6,000	2.50	(1.61, 3.89)
Type of medication prescribed	Oral only	1.00	
	Injection only	0.23	(0.11, 0.49)
	Both oral and injection	2.89	(1.90, 4.38)

CI = Confidence interval

iting ĺealth care providers means more people receiving injections (Janjua *et al,* 2005). The number of injections increases with an increase in the number of visits to health care providers, even adjusting for other attributes of injections (unpublished data). This has important implications for public health in Pakistan because most of the injections in the country are administered with syringes that have been used previously (Khan *et al*, 2000). Such unsafe practices have resulted in a nationwide epidemic of two blood-borne viral infections: hepatitis B and hepatitis C (Luby *et al,* 1997; Kham *et al,* 2000; Bari *et al,* 2001; Usman *et al,* 2003).

Similar to the results of a National Health Survey of Pakistan, a larger proportion of people in the urban areas compared to rural areas made contacts with health care providers during the previous 3 months (Council PMR, 1999). This could be due to several factors. First, people in rural areas may be healthier than their counterparts in urban areas and hence do not need to seek health care. Second, people in rural areas may be less health conscious or may lack access to health services, a factor which has been shown to determine those who seek care and who do not (Fiedler, 1981; Habib and Vaughan, 1986; Poland *et al,* 1990; Muller *et al,* 1998). Third, it could be due to seasonal variations because many people in the rural areas may have been busy picking cotton during the period they were asked about regarding health seeking behavior. Seasonal variations in health seeking rates in rural areas have also been reported in other developing countries, including Vietnam, Zaire, India and Kenya (Haddad and Fournier, 1995; Ha *et al,* 2002).

In our study, the private health care sector was found to be a major provider of health care. This finding is comparable to those of several studies conducted in Pakistan and in the region. For example, a study in a rural area in Sindh reported that 55% of sick children sought care from private practitioners (NoorAli *et al,* 1999). In Vietnam, Gujarat (India), and Karnataka State, 60%, 76%, and 80% of contacts were made with private care providers, respectively (Vissandjee *et al,* 1997; Bhatia and Cleland, 2001; Ha *et al,* 2002). These higher rates of contacts with private health care providers signify the importance of the private health sector in delivering health services. A lower proportion of people utilizing services offered by the public sector may be due to the inability of public sector hospitals and dispensaries to meet consumer needs. They operate only 4-6 hours a day, usually in the morning when people are busy at work, lack qualified staff, face absenteeism and are not easily accessible. However, we did not assess the quality of care provide by the private providers. Although overall private GPs were used more for health care than the public provider, this utilization was even higher in urban area. As a result of the lack of facilities in rural areas, many doctors tend to stay in urban areas. They are available when needed even at odd hours, and are easily accessible.

A median amount of Rs 30 (1US$ = Rs 63) was paid for seeking care. The median amount paid for care was higher in the rural area (Rs 50) than in the urban area (Rs 25). This could be because GPs in rural areas, compared with those in urban areas, are located relatively farther from people, and dispense medicine at one time, while in urban areas GPs dispense drugs for 1-2 days then ask the patient to return, or because there is more competition in urban areas, driving the prices lower (Yesudian, 1994). The median cost per visit was higher for private general practitioners than public physicians and dispensers because public facilities are being subsidized by the government. Rich people, especially in rural areas are more likely to consult GPs. An increasing trend in seeking private consultation has also been found in India and Indonesia (Chernichovsky and Meesook, 1986; Bhat, 1993). Rich people are more likely to go for trendy and sophisticated services as compared to the poor (Chernichovsky and Meesook, 1986). Increased utilization with income may be due to perceived superior quality of care provided by general practitioners compared to dispensers and public physicians, as indicated by other studies (Heller, 1982; Vissandjee *et al,* 1997). For the poor, the cost of seeking care is a diversion of their scarce resources from food to heath care. As their income increases a greater share seems to be spent on seeking health care from private physicians (Hanson and Berman, 1998). Higher utilization of GPs despite their high charges could be because of perceived better quality of care provided by them. Very low utilization of public BHUs, even lower than the dispensers operating illegally and most of whom are non-qualified, may be due to poor accessibility or perceived poor quality of care. There is certainly a need to investigate the role of perceived quality of care in the utilization of BHUs, the number of which totals 5,290 in the country. They are, and should be, a major source of care for rural poor, but their poor utilization by the poor may adversely affect the welfare of these people because they are paying scarce cash to private providers.

In more than 66% of the contacts, the care was provided by the private provider. The technical quality of care they provide has been questioned (Aljunid, 1995; Bojalil *et al,* 1998; Thaver *et al,* 1998). There is a growing body of evidence that they are involved in prescription of excessive, costly or unnecessary drugs and therapeutic injections (Greenhalgh, 1987; Aljunid, 1995; Bojalil *et al,* 1998; Thaver *et al,* 1998; Siddiqi *et al,* 2002). In our study private

care providers were more likely to administer therapeutic injections. Such practices by private practitioners are resulting in loss of public health.

The areas we selected are generally representative of urban and rural towns in the Sindh Province in health care delivery and ethnic composition. However, the results of our study should be interpreted with caution when generalizing them to Sindh or Pakistan. A limitation of our study was that there was an under-representation of men in our study. Because the survey was conducted during the day-time when many men were likely to be working, women, especially housewives, were more likely to be at home and hence had a higher probability of being selected.

Health care utilization rates in these areas are very high. The majority of health care contacts were with providers in the private sector, which remains largely unregulated. Even with an increasing share of private sector healthcare, the public sector remains the key provider of essential preventive and curative services for the poor. Strategies are needed to make it more accessible to those who cannot afford to buy services from private providers. Besides provision of services, the government has a very important regulatory role to play in the development and shaping of the private sector in an appropriate direction. More work is needed to understand the dynamics of decision making in seeking healthcare, choice of provider, role of perceived quality of care and quality of care.

ACKNOWLEDGEMENTS

We are greatly indebted to the Department of Essential Health Technologies, World Health Organization, Geneva, Switzerland for their financial support. This project was supported in part by International Training and Research in Environmental and Occupational Health 5D43TW05750 from the Fogarty International Center at the National Institute of Health, United States.

REFERENCES

Ahmad K, Jafar TH, Chaturvedi N. Self-rated health in Pakistan: results of a national health survey. *BMC Public Health* 2005; 5: 51.

Aljunid S. The role of private medical practitioners and their interactions with public health services in Asian countries. *Health Policy Plan* 1995; 10: 333-49.

Bari A, Akhtar S, Rahbar MH, Luby SP. Risk factors for hepatitis C virus infection in male adult in Rawalpindi-Islamabad, Pakistan. *Trop Med Int Health* 2001; 6: 732-8.

Bennett S, Woods T, Liyanage WM, Smith DL. A simplified general method for cluster-sample surveys of health in developing countries. *World Health Stat Q* 1991; 44: 98-106.

Berman P. Organization of ambulatory care provision: a critical determinant of health system performance in developing countries. *Bull World Health Organ* 2000; 78: 791-802.

Bhat R. The private /public mix in health care in India. *Health Policy Plan* 1993; 8: 43-56.

Bhatia JC, Cleland J. Health-care seeking and expenditure by young Indian mothers in the public and private sectors. *Health Policy Plan* 2001; 16: 55-61.

Bhutta ZA, Gupta I, de'Silva H, *et al.* Maternal and child health: is South Asia ready for change? *BMJ* 2004; 328: 816-9.

Black RE, Morris SS, Bryce J. Where and why are 10 million children dying every year? *Lancet* 2003; 361: 2226-34.

Bojalil R, Guiscafre H, Espinosa P, *et al.* The quality of private and public primary health care management of children with diarrhoea and acute respiratory infections in Tlaxcala, Mexico. *Health Policy Plan* 1998; 13: 323-31.

Chakraborty N, Islam MA, Chowdhury RI, Bari W. Utilisation of postnatal care in Bangladesh: evidence from a longitudinal study. *Health Soc Care Community* 2002; 10: 492-502.

Chernichovsky D, Meesook OA. Utilization of health

services in Indonesia. *Soc Sci Med* 1986; 23: 611-20.

Council PMR: National Health Survey of Pakistan 1993-1994. Islamabad, Pakistan, 1999.

Fiedler JL. A review of the literature on access and utilization of medical care with special emphasis on rural primary care. *Soc Sci Med[C]* 1981; 15: 129-42.

Greenhalgh T. Drug prescription and self-medication in India: an exploratory survey. *Soc Sci Med* 1987; 25: 307-18.

Ha NT, Berman P, Larsen U. Household utilization and expenditure on private and public health services in Vietnam. *Health Policy Plan* 2002; 17: 61-70.

Habib OS, Vaughan JP. The determinants of health services utilization in southern Iraq: a household interview survey. *Int J Epidemiol* 1986; 15: 395-403.

Haddad S, Fournier P. Quality, cost and utilization of health services in developing countries. A longitudinal study in Zaire. *Soc Sci Med* 1995; 40: 743-53.

Hanson K, Berman P. Private health care provision in developing countries: a preliminary analysis of levels and composition 48. *Health Policy Plan* 1998; 13: 195-211.

Heller PS. A model of the demand for medical and health services in Peninsular Malaysia. *Soc Sci Med* 1982; 16: 267-84.

Janjua NZ, Akhtar S, Hutin YJ. Injection use in two districts of Pakistan: implications for disease prevention. *Int J Qual Health Care* 2005; 17: 401-8.

Khan AJ, Luby SP, Fikree F, *et al.* Unsafe injections and the transmission of hepatitis B and C in a periurban community in Pakistan. *Bull World Health Organ* 2000; 78: 956-63.

Luby SP, Qamruddin K, Shah AA, *et al.* The relationship between therapeutic injections and high prevalence of hepatitis C infection in Hafizabad, Pakistan. *Epidemiol Infect* 1997; 119: 349-56.

Mills A, Brugha R, Hanson K, McPake B. What can be done about the private health sector in low-income countries? *Bull World Health Organ* 2002; 80: 325-30.

Muller I, Smith T, Mellor S, Rare L, Genton B. The effect of distance from home on attendance at a small rural health centre in Papua New Guinea. *Int J Epidemiol* 1998; 27: 878-84.

Murray CJL, Lopez AD. Global Burden of Disease: A comprehensive assessment of mortality and disability from diseases, injuries, and risk factors in 1990 and projected to 2020. Boston: Harvard University Press, 1996.

NoorAli R, Luby S, Rahbar MH. Does use of a government service depend on distance from the health facility? *Health Policy Plan* 1999; 14: 191-7.

Poland BD, Taylor SM, Hayes MV. The ecology of health services utilization in Grenada, West Indies. *Soc Sci Med* 1990; 30: 13-24.

Population Census Organization: District Census Report of Karachi 1998. Islamabad: Pakistan, 2000a.

Population Census Organization: District Census Report of Mirpur Khas 1998. Islamabad: Pakistan, 2000b.

Siddiqi S, Hamid S, Rafique G, *et al.* Prescription practices of public and private health care providers in Attock District of Pakistan. *Int J Health Plann Manage* 2002; 17: 23-40.

Simonsen L, Kane A, Lloyd J, Zaffran M, Kane M. Unsafe injections in the developing world and transmission of bloodborne pathogens: a review. *Bull World Health Organ* 1999; 77: 789-800.

Thaver IH, Harpham T, McPake B, Garner P. Private practitioners in the slums of Karachi: what quality of care do they offer? *Soc Sci Med* 1998; 46: 1441-9.

Usman HR, Akhtar S, Rahbar MH, Hamid S, Moattar T, Luby SP. Injections in health care settings: a risk factor for acute hepatitis B virus infection in Karachi, Pakistan. *Epidemiol Infect* 2003; 130: 293-300.

Vissandjee B, Barlow R, Fraser DW. Utilization of health services among rural women in Gujarat, India. *Public Health* 1997; 111: 135-48.

Yesudian CAK. Behaviour of private sector in health care market of Bombay. *Health Policy Plan* 1994; 9: 72-80.