

Outpatient care utilization in urban Kerala, India

JEAN-FRÉDÉRIC LEVESQUE,^{1,2} SLIM HADDAD,² DELAMPADY NARAYANA^{2,3} AND PIERRE FOURNIER⁴

¹*Institut national de santé publique du Québec (INSPQ), Canada,* ²*Groupe de recherche interdisciplinaire en santé (GRIS), Département de médecine sociale et préventive, Faculté de médecine, Université de Montréal, Canada,* ³*Centre for Development Studies (CDS), Thiruvananthapuram, Kerala, India and* ⁴*Groupe de recherche interdisciplinaire en santé (GRIS), Département de médecine sociale et préventive, Faculté de médecine, Université de Montréal, Canada*

Context: Kerala is characterized by a high density of public and private health infrastructure. While less inequality in access has been reported in this Indian state, few studies have looked at problems found within cities. Escalation of costs of private services and reduced public investments could generate some inequalities in access for the poor.

Objective: To assess factors associated with utilization and source of outpatient care in urban Kerala, and to discuss policy implications with regards to access to care.

Methods: A multilevel analysis of individual and urban characteristics associated with utilization and source of outpatient care was conducted using data from a 1995–96 survey by the National Sample Survey Organisation on health care in urban Kerala.

Results: There is a high level of utilization (83.6%) of allopathic medical services. Controlling for illness severity and age, utilization thereof was lower for the very poor (OR 0.13 [0.03; 0.49]), inhabitants of medium towns (OR 0.20 [0.05; 0.70]), and inhabitants of cities with a lower proportion of permanent material (*pucca*) houses (0.21 [0.06; 0.72]). Among all users, 77% resorted to a private source of care. Utilization of a private provider was less likely for the very poor (OR 0.13 [0.03; 0.51]) and individuals from casual worker households (OR 0.54 [0.30; 0.97]), while it was more likely for inhabitants of cities from both low public bed density districts (OR 4.08 [1.05; 15.95]) and high private bed density districts (OR 5.83 [2.34; 14.53]). Problems of quality and accessibility of the public sector were invoked to justify utilization of private clinics. A marked heterogeneity in utilization of outpatient care was found between cities of various sizes and characteristics.

Conclusion: This study confirms high utilization of private outpatient care in Kerala and suggests problems of access for the poorest. Even in a context of high public availability and considering the health transition factor, relying on the development of the private sector to respond to increasing health care needs could create inequalities in access. Investing in the public urban primary care system and ensuring access to quality health care for the poorest is warranted.

Key words: access to health care, poverty, developing countries, primary health care, urban health

Introduction

Urban areas in developing countries generally show better health indicators and have more health facilities than rural areas. Their populations tend to benefit from higher economic status, enjoy better living conditions and better access to health care. However, several studies have demonstrated that urban health care facilities often benefit only an affluent minority and that widespread socioeconomic inequalities result in major health disparities (Cairncross et al. 1990; Rossi-Espagnet et al. 1991; WHO 1993; Harpham and Tanner 1995; Sclar et al. 2005; Vlahov et al. 2005). Access to care is hampered by the prevalence of costly specialized services so the poor are

left with fewer affordable care options. Wide differentials in access to care have been observed in large cities (Satterthwaite 1998). However, less is known about the gaps in access to care in small and medium towns (Harpham and Tanner 1995), where most of the urban population resides and where growth is outpacing that of larger agglomerations (United Nations 2004). Increasing urbanization and widening inequalities, unmatched by the development of affordable services, could lead to restrictions in access to care and higher propensity to resort to self-treatment among the poor (Castro-Leal et al. 2000).

Despite slow economic growth and low per capita income, Kerala has attained notable achievements in the field of

health (Franke and Chasin 1992; Thankappan and Valiathan 1998). This was accomplished with an emphasis on education and basic health care services and in a context of lesser socioeconomic inequalities (Panikar and Soman 1975; Drèze and Sen 2002). Kerala – one of the smallest and most densely populated states in India – has a level of urbanization of 35%; it is characterized by the predominance of small and medium towns (Sreekumar 1993), with 13 of its urban agglomerations respectively numbering 100 000 to 1.3 million inhabitants (Census of India 2001).

Kerala has the highest density of public and private medical facilities among major states in India (Government of India 2003). Its highly developed public health care system comprises medical colleges, district and local hospitals and primary health centres (PHC) and subcentres. The system is decentralized and most public sector medical institutions are located in rural areas (Narayana and Hari Kurup 2000). The allopathic system also comprises a large private sector, run by for-profit providers (e.g. general practitioners, private hospitals and dispensaries, registered medical practitioners) and not-for-profit providers (e.g. voluntary health programmes, charitable institutions, missions, churches and trusts). The private sector is prominent, with the large majority of the state's doctors (86%) and hospitals (82%); furthermore, 58% of hospital beds (found both in hospitals and physicians' offices) are in the private rather than in the public sector (Kutty 2000; Varatharajan et al. 2002). A large private informal sector complements the offering of services (e.g. practitioners without formal training, faith healers, herbalists, priests) (Bhat 1993, 1999).

Kerala is known for its very high rates of perceived morbidity (Kunhikannan and Aravindan 2000) and utilization of health services in the context of its health transition (Kannan et al. 1991; Panikar 1998). Studies have shown that utilization of private services has reached considerable levels in Kerala (Krishnan 2000; Kunhikannan and Aravindan 2000; Narayana 2001), even among the poor (Kannan et al. 1991), especially where outpatient care services are concerned (Mahal et al. 2001). Yet, problems of access to care have been documented: the poor face the greatest barriers to medical services (Krishnan 2000) and, in situations of need, they more often refrain from seeking medical help (Pillai et al. 2003). As in other parts of India, primary health care needs remain poorly addressed in urban Kerala. The relative lack of governmental PHCs (although they abound in rural areas) could promote high levels of utilization of public hospitals and private providers for outpatient care needs (Varatharajan et al. 2004).

Public and private services have been reported to vary in quality from one institution to another in Kerala (Narayana 2001). The widespread lack of adequate personnel, diagnostic tests, therapeutic equipment and medication has been documented in public hospitals (Varatharajan et al. 2002). These quality-related problems

could decrease the effective availability of curative care in the public system. Households' spending for both public and private services has been shown to be high and rising rapidly in Kerala (Narayana 2001). In a context of high density of private services, very low levels of health insurance coverage and poor quality of public services, access to quality care can be determined by the economic situation of potential users (Nabae 2003).

The limited number of studies looking at access to health care in urban Kerala leaves many questions unanswered. What is the poorest's situation with regard to access to health care? Do urban dwellers, regardless of their economic status, choose equally between the range of public and private providers? Which urban characteristics are more conducive to access to care? This study aims to analyse the determinants of utilization of outpatient (i.e. care received on an ambulatory basis, not involving spending a night in hospital) health care services in urban Kerala and their implications with regard to access to care.

Conceptual background

In this study, access is defined as the opportunity to reach and obtain appropriate health care services. Access results from the interface between the characteristics of persons, households, social and physical environments and the characteristics of health systems and organizations (Penchansky and Thomas 1981). Factors to consider in the assessment of access could thus pertain to *supply-side* features of health systems and organizations, to *demand-side* features of populations, and to *process* factors describing the ways in which access is realized (Daniels 1982). Within this conceptualization, measuring utilization (the actual quantity of health care services and procedures used) (Shengelia et al. 2003) and non-utilization in the face of perceived need for services and severity of illness enables inferences about potential access to care (Waters 2000).

Recent studies have suggested that community characteristics – in addition to individual and household idiosyncrasies and to the overall availability of health services – could be important determinants of utilization (Ecob and Macintyre 2000; McDade and Adair 2001). Enabling factors or barriers could pertain to both households and social environment (Unschuld 1975; Andersen 1995), the care that individuals consume thus being a function of their demographic, social and economic characteristics as well as those of the health systems (Haddad and Fournier 1995).

Individuals are affected by social, cultural, economic or physical factors and studies on health-care-seeking behaviour need to emphasize structural constraints as well as personal choices (Duncan et al. 1996; Ecob and Macintyre 2000). Structural effects could cause people with similar individual attributes to have different access

to health care across geographical and social contexts (Curtis and Jones 1998). The interaction between these factors and household and individual characteristics would generate ability to reach facilities and opportunity to choose (i.e. not being constrained to a single option). Few studies have looked at the interactions of individual, household and community level characteristics to explain inequalities in access in cities of developing countries.

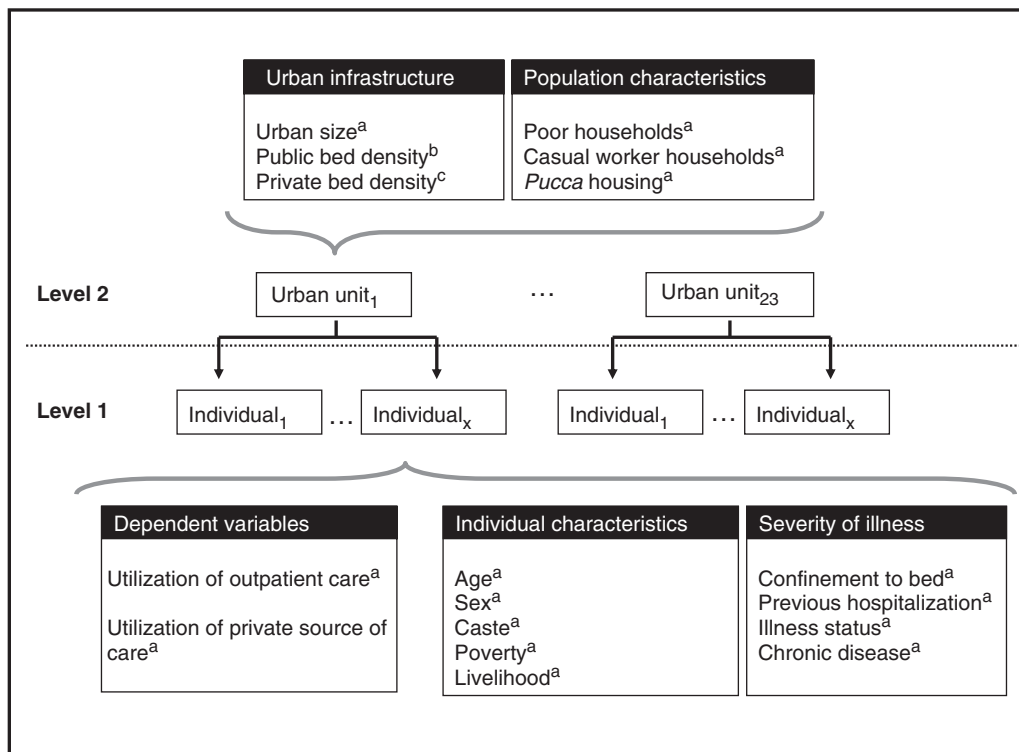
Methods

We analysed data on urban Kerala from a population survey conducted by the National Sample Survey Organisation (NSSO) in 1995 and 1996 (NSSO 1996). The stratified sampling randomly selected census urban blocks (neighbourhoods of approximately 250 households) in the first stage. During the second stage, 10 households were randomly selected in each block with an over-sampling of households with young infants (two households) and those reporting at least one hospitalization over the previous year (two households). Weights used to correct for this stratified sampling were provided by the NSSO. Information was collected about every individual in the household by interviewing its head or another adult. The standardized questionnaire covered items pertaining to perceived morbidity, utilization of health services, and individual and household

characteristics. Information was gathered from 10 314 individuals living in 2078 households nested in 208 urban blocks; the data collection was also distributed equally throughout the year to avoid bias resulting from seasonal variations in morbidity. Our analysis includes individual- and urban-level variables related to demand and supply, our purpose being if and how such variables are associated with utilization of health services (vs. non-utilization) and private source of care (vs. public) for persons reporting an illness episode during the 15-day period prior to the survey (see Figure 1). For those declaring more than one source of care, the most recent was considered for analysis.

The economic status measure provided in the NSS is the household consumption expenditure. Households with a monthly per capita consumption expenditure below the official poverty line of 310 Rupees (about US\$7) per capita per month were considered as being *poor*.¹ We also calculated the adjusted per capita consumption expenditure using the OECD equivalence scale (OECD 1982) to take into account economies related to household size and composition.² Poor households rising above the poverty line after adjustment were identified as *moderately poor*; those remaining under the poverty line after adjustment were considered *very poor*.

NSSO data provided non-nominal information on the urban areas surveyed. To create the urban-level variables,



^aNSSO 52nd round, Schedule 25.0, 1995-96 (NSSO 1996).
^bKerala State Planning Board, Economic Review (Government of Kerala 1995).
^cSurvey of Private Medical Institutions in Kerala (Government of Kerala 1996).

Figure 1. Source of data and variables

we used the available information about the district of origin and urban size to nominally identify cities. Due to the lack of information in the NSSO file, towns of less than 50 000 inhabitants could not be identified and have been grouped by districts. We created three variables related to the level of urban infrastructure and three variables related to the characteristics of populations (Figure 1). Appendices 1 and 2 describe the variables used and the sample size for each variable category.

Data analysis

Associations between supply- and demand-side variables and dependent variables were assessed through multilevel modelling.³ Data were hierarchically organized, all individual-level information nested within urban units. All descriptive, bivariate and multiple regression analyses were weighted by the inverse of the sampling fraction to correct for the stratified sampling. Variables with more than 10% missing data were excluded. Variables presenting a statistically significant association (χ^2 value at $P < 0.20$) with the dependent variables were entered in multiple regression models. Multilevel logistic regressions⁴ were used to model utilization (vs. non-utilization) of health care services among those reporting an illness episode⁵ and utilization of private (vs. public) providers as source of care. The final models were built by running models of increasing complexity.⁶ Variables were excluded at each model-building step if non-statistically significant

and if their presence did not alter other coefficients. The intra-class correlation was estimated using the formulae suggested by Snijders and Bosker (1999). A parsimonious number of variables were tested to avoid over-parameterization of the models. Descriptive and bivariate analyses were performed with SPSS version 11.5 (SPSS Inc. 2002). All multiple regression models were performed with MLwiN 1.10 and 2.0 (MLwiN 2003).

Results

Sample characteristics

Among the NSS urban Kerala sample, 423 individuals reported an illness episode within the 15 days prior to the survey. These individuals belonged to 312 households nested in 23 cities. Scheduled caste or tribe households represented 7.5% of the sample while 22.0% of individuals were from poor households (13.1% moderately poor and 6.9% very poor). Our urban-level sample includes 5 large cities, 7 medium towns and 11 small town district areas. Table 1 presents characteristics of each urban unit.

In bivariate analyses, more illnesses were reported at both ends of the age range: 14.7% below 2 years old; 11.5% from 2 to 5 years; 7.1% from 6 to 17 years; 6.6% between 18 and 49 years; and 14.5% 50 years and older

Table 1. Description of urban contexts

Urban units	Urban size	Proportion of poor	Proportion of casual workers	Proportion of <i>pucca</i> housing	Presence of a medical college	Bed density ^b	
						Public	Private
Kasaragod/Kanhangad	Medium	63 [+]	68 [+]	88	no	79 [low]	122 [low]
Kannur district	Small	23 [+]	45	74	no	104	182 [low]
Kannur/Thalassery	Medium	13 [+]	29	85	yes	104	182 [low]
Kozhikode district	Small	16 [+]	55 [+]	83	no	177	155 [low]
Quilandi/Vadakara	Medium	13 [+]	64 [+]	70	no	177	155 [low]
Kozhikode/Beyepore	Large	9	42	89	yes	177	155 [low]
Malappuram district	Small	5	60 [+]	81	no	77 [low]	128 [low]
Malappuram/Menjeri	Medium	0	50 [+]	83	no	77 [low]	128 [low]
Thrissur district	Small	7	43	86	no	159	325
Thrissur	Large	10	18	87	yes	159	325
Palakkad district	Small	8	44	48 [-]	no	94 [low]	94 [low]
Palakkad	Medium	0	55 [+]	97	no	94 [low]	94 [low]
Ernakulam district	Small	11	35	89	no	150	412
Kochi/Ernakulam	Large	8	37	95	yes	150	412
Kottayam district	Small	33 [+]	36	84	no	202	432
Kottayam	Medium	5	41	95	yes	202	432
Allapuzha district	Small	31 [+]	49	96	no	208	192 [low]
Allapuzha	Medium	10	50	74	yes	208	192 [low]
Pathanamthitta district	Small	8	37	90	no	96 [low]	378
Kollam district	Small	5	55 [+]	86	no	97 [low]	312
Kollam	Large	0	33	39 [-]	no	97 [low]	312
Thiruvanthapuram district	Small	11	54 [+]	62 [-]	no	250	177 [low]
Thiruvanthapuram	Large	10	29	65 [-]	yes	250	177 [low]

^aThe term 'district' describes a grouping of small towns in one district. ^bNumber of beds per *lakh* population (100 000 persons) at the district level. [+] denotes above the districts' mean; [-] denotes below the districts' mean; [low] denotes low bed density (below 100 for public and 200 for private) in dichotomous variables.

Table 2. Associations (weighted) of study variables with utilization of outpatient care services and choice of private source of outpatient care

Dependent variables		Utilization of outpatient care (n _i = 423)	Choice of private source (n _i = 365)
<i>Illness characteristics</i>	Bedridden	93.2% ^a	73.1% ^b
	No confinement to bed	79.3% ^a	79.5% ^b
	Previous hospitalization	95.1% ^a	78.9%
	No previous hospitalization	81.9% ^a	77.3%
	Ongoing illness	89.3% ^a	73.1% ^b
	Illness resolved	79.5% ^a	80.3% ^b
	Acute illness	82.5% ^b	77.5%
<i>Age</i>	Chronic illness	100.0% ^b	72.2%
	Below 2 years old	93.9% ^a	93.5% ^a
	2–17 years old	91.4% ^a	76.4% ^a
	18–49 years old	74.8% ^a	76.5% ^a
<i>Sex</i>	50 years and older	78.0% ^a	71.1% ^a
	Female	81.8%	77.1%
<i>Caste</i>	Male	84.7%	77.4%
	Scheduled castes/tribes	83.9%	61.5% ^a
<i>Poverty status</i>	Other castes	83.0%	78.5% ^a
	Very poor	42.9% ^a	41.7% ^a
	Moderately poor	87.3% ^a	70.4% ^a
<i>Employment</i>	Non poor	86.0% ^a	80.4% ^a
	Casual work	79.7%	68.8% ^a
<i>Urban size</i>	Non casual work	84.6%	81.4% ^a
	Small town	83.1%	74.9%
	Medium town	77.0%	85.1%
<i>District bed density</i>	Large town	87.6%	79.1%
	Low public bed density	75.4% ^b	88.4% ^b
	High public bed density	84.3% ^b	76.0% ^b
	Low private bed density	82.7%	65.0% ^a
	High private bed density	83.7%	86.4% ^a
<i>Population characteristics</i>	High below-poverty population	79.9% ^b	70.9% ^a
	Low below-poverty population	85.4% ^b	81.0% ^a
	High casual worker population	76.5% ^b	78.8%
	Low casual worker population	84.3% ^b	77.2%
	Low proportion of <i>pucca</i>	75.6% ^b	70.0%
	High proportion of <i>pucca</i>	84.1% ^b	78.2%

^aPearson's χ^2 statistics $P \leq 0.05$; ^bPearson's χ^2 statistics $P \leq 0.20$.

(χ^2 , $P < 0.05$). Gender, caste or economic group did not account for any differences in illness reporting. Severity of illness (as measured by restriction of activity and confinement to bed) was not gender-related; however, it was associated with age (the younger and older showing lower severity) and caste (scheduled caste showing higher severity than other castes). Poor individuals (especially the very poor) reported higher severity than their better-off counterparts (χ^2 , $P < 0.05$).

Utilization of outpatient care services

Among the ill, 83.6% reported utilization of outpatient services. Among non-users, most (85%) suggested the illness did not warrant recourse to health care. Financial reasons and absence of medical facilities in the neighbourhood explained the remaining cases of forgone utilization. Table 2 describes associations of individual- and urban-level variables with utilization of services.

Multilevel modelling of outpatient services utilization showed a significant variance between urban units

($P < 0.05$; average of 85% of utilization with plausible value range across units of [42%; 98%]). The dispersion of residuals (presented in Figure 2) shows this variability in utilization across urban units. Medium towns and urban areas with a high proportion of poor residents are mostly found in urban units with lower levels of utilization.

People having been confined to bed during their illness (bedridden), those still ill at the time the survey was conducted (ongoing) and the younger respondents were more likely to have utilized medical services (Table 3). The likelihood of using any service whatsoever is significantly lower among the very poor, inhabitants from medium size towns and from urban units with a lower proportion of *pucca*⁷ housing. Approximately 26% of the total variance was attributable to the urban-level, the rest being due to individual variables. The introduction of level-2 variables led to a 44% reduction in the variance initially observed between urban units. Nonetheless, significant urban-level variance in the final model ($P < 0.05$) suggests unexplained variations remaining in the data at the urban level.

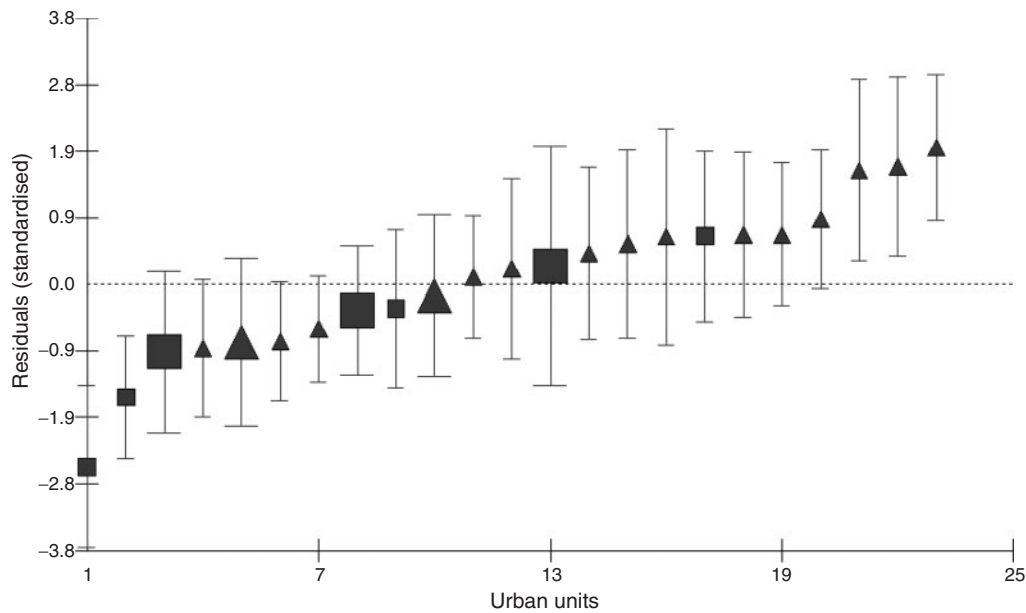


Figure 2. Standardized residuals departure from the mean utilization across urban units (ranked) Legend: Large symbols = high proportion of poor cities; small symbols = low proportion of poor cities. Squares = medium towns; triangles = small and large towns. 90% confidence intervals of departure of residuals from the mean shown for each urban context.

Table 3. Utilization of health care services ($n_i=423$; $n_j=23$). Logistic regression: parameter estimates; standard errors (binomial logit; weighted; 2nd order penalized quasi likelihood)

Fixed effects	OR	95% CI
<i>Severity</i>		
Bedridden ($n=117$) (REF = no confinement to bed)	7.93	3.60–17.20
Ongoing episode ($n=150$) (REF = episode ended)	3.77	1.80–7.90
<i>Individual characteristics</i>		
Age (REF = 18 years and older) Below 18 years old ($n=195$)	4.63	1.60–13.10
Poverty (REF = non poor)		
Very poor ($n=28$)	0.13	0.03–0.49
Moderately poor ($n=63$)	1.00	0.38–2.60
<i>Urban context characteristics</i>		
Urban size (REF = small towns)		
Medium towns ($n=7$)	0.20	0.05–0.70
Large towns ($n=5$)	1.13	0.20–6.62
Poor neighbourhood ($n=7$) (REF = non poor)	0.41	0.15–1.13
Low <i>pucca</i> housing ($n=4$) (REF = high <i>pucca</i>)	0.21	0.06–0.72
<i>Random effects</i>	Variance	SE
Level 2	0.965 ^b	0.329
Intra-class correlation (empty model)	0.26	
Intra-class correlation (final model)	0.20	

^aVariables ‘previous hospitalization’, ‘chronic illness’, ‘public bed density’ and ‘private bed density’ were excluded from the final model.

^b $P \leq 0.05$.

Table 4. Reasons expressed for utilizing a private source of care

	Poor ($n=43$)	Non poor ($n=207$)
Public facility too far/too long to be seen in public	20.9% ^a	9.2% ^a
Poor quality of services in public ^b	7.0% ^a	43.0% ^a
Medicines not available or not effective in public facility	2.3%	7.2%
Private doctor more easily available	53.5% ^a	27.1% ^a
Other reasons	16.3%	13.5%

^a χ^2 statistics with Yates correction $P \leq 0.05$.

^bIncludes respondents expressing dissatisfaction with previous treatments received, those expressing lack of personal attention and those reporting bad treatments in the public sector.

Choice of public or private provider analyses

Among users, 77% resorted to a private source of care. Only 2.3% had consulted more than one source of care. Most respondents explained their choice of a private provider by their dissatisfaction with previous treatments, problems of access in the public sector and/or the higher availability of private providers. Among the poor, the latter reason was even more prominent (Table 4). The last column in Table 2 shows the association of independent variables with utilization of private source of care.

Logistic modelling of choice of a private source of care showed a significant variance between urban units ($P < 0.05$; average of 78% of individuals utilizing a private

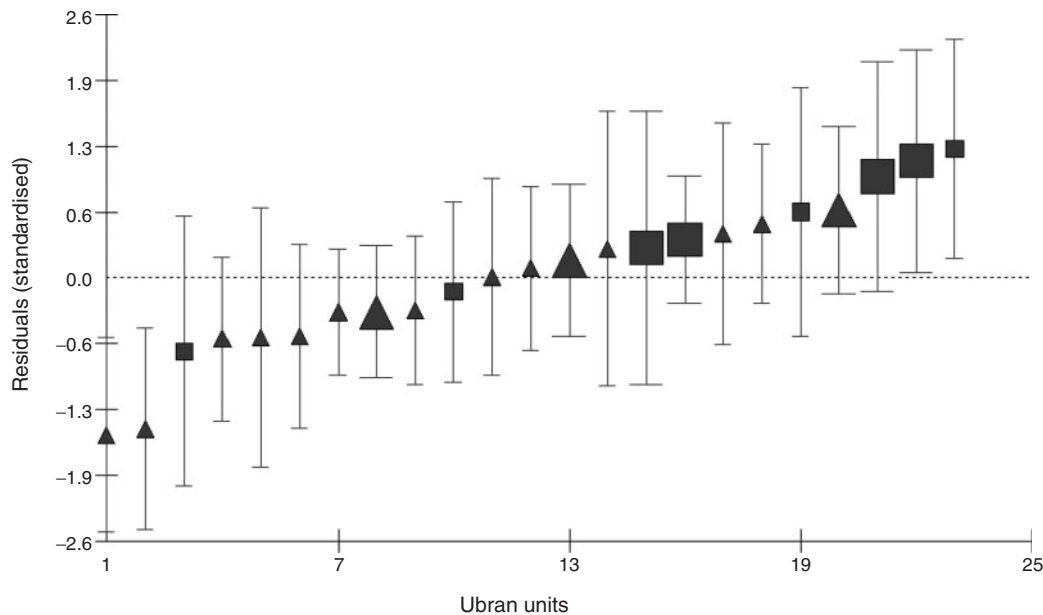


Figure 3. Standardized residuals departure from the mean of private utilization across urban units (ranked) Legend: Large symbols = high private bed density; small symbols = low private bed density. Triangles = high public bed density; squares = low public bed density. 90% confidence intervals of departure of residuals from the mean shown for each urban context.

Table 5. Choice of private provider ($n_i=365$; $n_j=23$). Logistic regression: parameter estimates; standard errors (binomial logit; weighted; 2PQL)

Fixed effects	OR	95% CI
<i>Individual characteristics</i>		
Age (REF = 2 years and older)	0.30	0.06–1.38
Below 2 years old (n = 57)		
Poverty (REF = non poor)		
Very poor (n = 12)	0.13	0.03–0.51
Moderately poor (n = 55)	0.57	0.27–1.20
Casual worker (n = 123) (REF = other)	0.54	0.30–0.97
<i>Urban context characteristics</i>		
Low public bed density (n = 9) (REF = high)	4.08	1.05–15.95
High private bed density (n = 9) (REF = Low)	5.83	2.34–14.53
<i>Random effects</i>		
Level 2	Variance	SE
Intra-class correlation (empty model)	0.394	0.274
Intra-class correlation (final model)	0.28	
	0.11	

^aVariables ‘bedridden’, ‘ongoing episode’, ‘caste’, ‘region’ and ‘poor city’ were excluded from the final model.

source with plausible value range across units of [28%; 97%]). Dispersion of residuals of utilization (presented in Figure 3) illustrates the variability in utilization of private sources across urban units. High private (enlarged) and low public (squares) bed density units cluster at the right-hand side among units with higher proportion of private utilization.

Table 6. Summary of findings

	Individual-level variables	Urban-level variables
<i>Access to health care</i>		
Lower	Very poor	Medium towns Low <i>pucca</i> housing
Higher	Bedridden Ongoing illness Below 18 years old	
<i>Choice of private provider</i>		
Lower	Very poor Casual worker	
Higher		Low public bed density High private bed density

The final model shows that being very poor and from a casual worker household significantly lowers the probability of using a private source of care (Table 5). Urban units from low public bed density districts and those from high private bed density districts are associated with higher utilization of a private source of care. In the empty model, approximately 28% of the variance was attributable to the urban level. The comparison of the variances between models including individual level predictors and the full model suggests 64% of reduction in variance between urban units. There remains no significant variation between urban units in the final model. Table 6 summarizes the principal results of our analyses of individual- and urban-level factors associated with utilization of health care services and choice of source of care in urban Kerala.

Discussion

Poverty and access to outpatient care

Evidence on barriers to access for the poor is key to the development of equitable health systems and the reduction of social exclusion (Feachem 2000). The study supports previous findings of high utilization, even among the poor, in Kerala (Krishnan 2000; Kunhikannan and Aravindan 2000; Mahal et al. 2001; World Bank 2001). Disaggregating poverty has been suggested to portray the impact of socioeconomic vulnerability on access (Vaidyanathan 2001). This is important in Kerala, where consumption expenditure data positions most of the population just above or under the poverty line. We found that, controlling for severity and age, utilization of outpatient care is restricted for the very poor. This corroborates results from studies of health-care-seeking which suggest that low economic status households have lower recourse to medical services (Gupta and Datta 2003; Pillai et al. 2003) and higher rates of self-medication (Saradamma et al. 2000).

In our study, the relationship between poverty and perceived severity of illness shows an unclear though interesting pattern. The poor are more likely to report severe diseases but they are also less likely to report benign illnesses. The latter result has probably less to do with differential morbidity across economic groups than with what Amartya Sen calls a ‘perception bias’, in other words a tendency among the most deprived to report less ill-health and underestimate their health problems (Sen 2002). Actually, higher levels of perceived health have been reported in Kerala among the poor (Murray and Chen 1993; Sen 1994) and some of the most deprived tribal populations (Haddad et al. 2005). Some have suggested that increasing costs of care could push the poor not to consider themselves sick (Dilip 2000). This under-reporting tendency, also found in various developing countries, could result in the underestimation of disparities in access (Castro-Leal et al. 2000). In addition, the reported information, gathered from a single adult per household, could have underestimated the reporting of illness, especially untreated illness, for other members in the household. While utilization data pose challenges, introducing supply-side variables and the controlling of severity has allowed us to provide the best possible assessment of access. Given that very few population-wide surveys collect information on provider characteristics, our method attempts to disentangle access from utilization data at the population level.

Looking at the distribution of spending among Indian states, previous analyses of NSS data suggested that Kerala is the least unequal jurisdiction, having a fairly even distribution of out-of-pocket spending across income groups (Mahal et al. 2001; World Bank 2001). We did not find a significant difference in levels of utilization between those we called the moderately poor and the non-poor. But the very poor – which accounted for nearly 7% of our sample – showed much lower rates of utilization. In a state

like Kerala, with a wide availability of institutions in the public sector, these disparities in access to care can largely be attributed to the relatively high prices of health care goods and services and the economic constraints faced by the very poor. This illustrates the need, even in a so-called egalitarian state like Kerala, for public policies aiming at increasing financial accessibility for the very poor. This goal could be reached by alleviating the financial problems that afflict the poor and the economic burden of their health care costs. One should also consider that in less equity-oriented Indian states or third-world countries, with less-developed public sectors, these inequalities are even more striking.

High levels of reported illness during the last 2-week period have been found in Kerala (27.1% of households in our sample) compared with other Indian states (NSSO 1998; Dilip 2000) or countries (Pannarunothai and Mills 1997). Despite the NSS being a large survey, few cases of reported illness were available for analysis in the urban Kerala sample. Our analyses are sometimes based on low numbers of very poor, although their prevalence is in the range found in previous surveys (9.8% in the 1993–94 NSS and 6.2% in 1999–2000 in Radakrishna et al. 2004). This explains the size of confidence intervals around odds ratio. While this limits the assessment of the exact magnitude of disparities, statistically significant differences in utilization across economic groups remained. Furthermore, a sensitivity analysis – using 75% of the poverty line as a criteria to define the very poor – showed similar results.

Segmented public and private sectors

Our study corroborates previous findings presented in the introduction about the relatively high rates of utilization of outpatient services in Kerala. It also suggests that the market for outpatient services is segmented. The very poor and casual worker households tend to use public services while the wealthier tend to consult private practitioners. This means a restricted choice of source of care among those who have less, a situation that is worrisome for individuals living in households headed by a casual worker, which represent a growing proportion of poor urban households (Radakrishna et al. 2004). In fact, Kerala is the Indian state with the highest rate of unemployment (Ramachandran 1996) and many of its residents rely on casual work as a source of income.

Over the last two decades, health care costs, especially of private services, have increased significantly in India (Bhat 1999; Dilip 2000; Purohit 2001). This has gradually made several private services unaffordable for the poor and casual workers, restricted their health care opportunities and therefore pushed them to turn to the less attractive but cheaper public sector. Since the poor are known to spend relatively more of their income on health than the rich (Vaidyanathan 2001), choosing a private source of care, or even seeking care at all, can be out of reach for the very poor.

Access to quality

In this study, half of those who utilized private providers justified their choice with availability-related reasons (22% referred to problems of availability of public care and 32% indicated higher private availability), and quality-related reasons (32% suggested inadequate services in the public system on previous occasions). These findings confirm results from previous studies in India⁸ (Yesudian 1994; Kunhikanan and Aravindan 2000; Dilip and Duggal 2004). While reasons for using the private sector were available, no data were available to explain the utilization of public services. Further NSS surveys should pay attention to the reasons for using public facilities.

The reasons given to justify the utilization of private providers differed according to economic groups. While both poor and non-poor expressed problems with the availability and quality of services in the public sectors, the predominant reasons cited by poor individuals were related to geographical and temporal availability; quality was the main issue for non-poor individuals. This suggests that the poorest are constrained by situational factors to utilize the public sector: they become its client by force rather than by choice and ultimately receive services of lesser quality. If we view equity as being closely related to the concept of choice (Gilson 1989, 1998), a lack thereof generates clear inequities in health opportunities for very poor households. This underlines the necessity for public institutions to respond to the needs of the poor by assuring services with a focus on effective availability and quality (Maiga et al. 2003).

Echoing studies conducted in India and other developing countries, there is evidence to corroborate indications that public hospitals and outpatient units in Kerala provide services of poor quality and that the population has become dissatisfied with their services. Availability of medication and consumables is limited and irregular, maintenance, repair and replacement of building and medical equipment is problematic, and there are many concerns about staff motivation, absenteeism and interpersonal behaviours (Kutty 2000; Narayana 2001; World Bank 2001; Government of India 2002; Varatharajan et al. 2002). As a result, barriers to access to private health care services also limit opportunities to access quality care, although, of course, this does not mean that quality standards are consistent in the private sector.

Studies have pointed out many deficiencies in prescribing and treatment practices in the private sector in developing countries (Brugha and Zwi 1998; Yesudian 1999). The perception of higher quality of private services has often been related to better interpersonal skills rather than actual higher technical quality of clinical care. The private sector is very heterogeneous: it includes a wide range of facilities, from sophisticated hospitals serving the high income classes, to small clinics run by poorly qualified practitioners (Yesudian 1994). The poor tend to be more exposed to second-rate care, even in the private sector, where they consult untrained and minimally qualified

professionals more often than their better-off counterparts. Indeed, the affluent tend to consume private and public health care in secondary and tertiary level facilities (Pannarunothai and Mills 1997; World Bank 2001; Zwi et al. 2001; Gupta and Datta 2003).

These findings reinforce the call for legislation and guidelines to regulate the activities of the private and public sectors (Bhat 1999; World Bank 2001). Changing the attitude of public providers towards their clients could help to improve perceived quality of care. Further, the poor could see public primary care facilities as an option if problems of availability of medications and quality of doctor-patient relationships were addressed (Saradamma et al. 2000). A strong public sector would play a vital role in curbing some undesirable effects of private care, such as spiralling exploitative costs (Bhat 1999; Government of India 2002).

Supply-side factors related to access

The study identifies supply-side factors influencing utilization of outpatient care and choice between private and public sources of care. Failure of government facilities to meet patient demand has led to the development of the private sector and to a large increase in private health care expenditure (Kumar 1993). There has been a major increase in the private offering of services in Kerala over the last two decades. This trend may have driven the shift in favour of private providers and may have broadened the gap in access to outpatient care between the very poor and the non-poor. Increasing the availability of quality public health services through targeted financial and resource incentives in certain areas could promote utilization of public services among the poor, thus reducing their barriers to care. Furthermore, insuring the curative capacity of primary care facilities in the public sector would better address the needs of the elderly and of those with persistent communicable diseases, especially when poor (Nath et al. 1998; Saradamma et al. 2000).

We found lower utilization of outpatient care in medium-sized towns. In our sample, such towns are home to a significant number of casual workers, whereas no large city showed as high a proportion of casual workers within its population. This, combined with a lower density of public and private beds, suggests there is a true difference with regards to availability of services in medium-sized towns in Kerala (see Table 1). A further hypothesis could be that such towns have not benefited from the development of medical colleges and large private facilities which are mostly found in bigger cities. Neither have medium-sized towns benefited from the proximity to rural areas – where primary care centres are most numerous in Kerala – that small towns enjoy. Further studies should look into this to better explain this phenomenon.

We used the most recently available population survey on health care in India. While it is not yet possible to assess any trends in the associations found with barriers to utilization of outpatient care, some evidence suggests that

the situation could be worsening. Between 1986 and 1996, there was a 4% increase in the number of untreated ailing persons among the lower expenditure group, and the utilization of public sector outpatient services has been declining overall (NSSO 1998; Purohit 2001). This trend has been attributed to cuts in public investment (Government of India 2002; Dilip and Duggal 2004).

Conclusion

Kerala is a unique demographic, social and political context. A model of development of good health at low cost, it is now facing the challenges of an aging population, the emergence of chronic diseases and the demands of a health-conscious population. Our attempt to understand the factors associated with the utilization of health care services and the choices of source of care sheds light on disparities in access in urban Kerala. Ensuring access to care for the poorest and providing them with opportunities to access quality care poses challenges: it demands a reassessment of public primary care infrastructure in urban areas and the implementation of mechanisms to reduce the economic burden linked with utilization of health services, especially in the private sector. Important planning and allocation decisions are awaiting Kerala and other Indian states, along with other developing countries, to meet the health needs of the urban poor. Kerala can again be a source of knowledge for other states and countries entering similar phases of development. This study points to the need for continuing improvements and development of public health systems in urban areas of developing countries, especially in medium-sized towns, as a means to promote equity.

Endnotes

¹ This poverty line represents an indexation for 1995–96 of the most recent per capita poverty line (1993–94) suggested by the India Planning Commission.

² This type of measure corrects for the overestimation of poverty introduced by per capita measures of poverty. In a context such as Kerala, where the distribution of income across households shows lesser variability and with a concentration of households spread around the poverty line, the use of adjusted monthly per capita poverty consumption expenditure can identify the poorest households. Sensitivity analyses have confirmed that the *very poor* concentrate well under the per capita poverty line. The equivalence scale used attributed a value of 1 for the first adult, 0.7 for each subsequent adult and 0.5 for every member below 18 years of age (OECD 1982).

³ Multilevel modelling allows for the simultaneous estimation of individual and contextual effects and takes into account the extent to which individual responses are correlated through membership in clusters of higher levels, in our case urban units. It provides an appropriate partitioning of variance between individual and urban levels to generate unbiased estimates (Snijders and Bosker 1999).

⁴ All analyses were performed using restricted iterative generalized least-square (RIGLS) with the second order and penalized quasi-likelihood (PQL) approximation method. Variables were kept in the models when considered the main outcomes of interest, when statistically significant (95% CI

excluding the null value) or, if not significant, when they showed an impact on other significant variables.

⁵ Illness episode refers to the complete duration of the illness, benign illness refers to an illness for which no confinement to bed was ever reported during the episode, while a severe illness involves confinement to bed at some point during the episode.

⁶ The first models included a random intercept and level 2 (urban) variance components. This so-called ‘empty’ model did not include any explanatory variables and enabled us to determine the extent to which the nesting of individuals within urban contexts explained a significant part of the variance in the outcome of interest. The second models tested individual-level variables, while the final models tested the addition of urban-level variables. The second and third models were compared with the ‘empty’ model using the deviance chi-square test statistic.

⁷ *Pucca* houses or permanent houses are those whose walls and roofs are both made of permanent materials. The walls are either built with burnt bricks, metal sheets, stone or cement concrete. Roofing materials include tiles, slate, shingle, corrugated iron, zinc or other metal sheets, asbestos cement sheets, bricks, lime and stone, stone and RBC/RCC or concrete. *Kutcha* or temporary houses are dwellings whose walls and roofs are made of materials which need frequent replacement. Walls may be made of grass, leaves, reeds, bamboo, mud, unburnt brick or wood. The roof may be made from grass, leaves, bamboo, thatch, unburnt bricks or wood.

⁸ Those who preferred private care perceived that public facilities are in inconvenient locations (Nandraj et al. cited in Dilip and Duggal 2004), that private services are more adequate (23% of respondents), in closer proximity (15%) and that private doctors behave more appropriately (13%) (Kunhikandan and Aravindan 2000). The reasons for not using government institutions in this study were: no treatment available (10%); no medicines (14%); no doctor available (10%); solicitation of bribery (5%); or premises not clean (3%). A study of poor urban dwellers in Mumbai suggested long waiting hours, long distances and too brief contacts with the doctor as reasons for not using government services (Yesudian 1994).

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Biographies

Jean-Frédéric Levesque, MD, PhD (candidate) is currently a Medical Consultant in the Health Care and Health Systems Unit at the Institut National de Santé Publique du Québec, Canada. He collaborates with researchers from the International Health Unit at Université de Montréal on studies in south India. He has previously worked with tribal populations of the Nilgiri region in Tamil Nadu and has conducted research work on tuberculosis among refugee claimants in Canada.

Slim Haddad, MD, PhD (Health economics, Université Claude Bernard, Lyon), is currently professor at the department of social and preventive medicine and is affiliated to the International Health Unit at Université de Montréal. His work concentrates on equity in access to health care, on the impact of health care reforms and on economic burden of care in developing countries. [Address: Unité de santé internationale, Édifice Saint-Urbain, 3875 Saint-Urbain, 5e étage, Montreal (Quebec), H3W 1V1, Canada. E-mail: slim.haddad@umontreal.ca]

Delampady Narayana, PhD (Indian Statistical Institute, Calcutta), has been teaching at the Centre for Development Studies, Thiruvananthapuram, for the last 24 years. He has guided students in the areas of agricultural research systems, health economics and international trade. He is currently coordinating a major research project on Community Based Monitoring System for Access to Basic Services in Kerala. [Address: Centre for Development Studies, Prasanth Nagar Rd, Ulloor, Thiruvananthapuram, 695 011, Kerala, India. E-mail: narayana@cds.ac.in]

Pierre Fournier, MD, MSc, is currently professor at the department of social and preventive medicine and is affiliated to the International Health Unit at Université de Montréal. His work concentrates on equity issues related to health systems, immunization, human resources and maternal mortality, mainly in West Africa. He has previously worked at the Africa Development Bank as Medical Regional officer in Burkina Faso. [Address: Unité de santé internationale, Édifice Saint-Urbain, 3875 Saint-Urbain, 5e étage, Montreal (Quebec), H3W 1V1, Canada. E-mail: pierre.fournier@umontreal.ca]

Correspondence: Jean-Frédéric Levesque, Unité de santé internationale Édifice Saint-Urbain, 3875 Saint-Urbain, 5e étage Montreal (Quebec), H3W 1V1, Canada. Tel: +1 (514) 528-2400 ext. 3216; Fax: +1 (514) 528-2512; E-mail: jflevsq@santepub-mtl.qc.ca

Appendix 1. Urban-level variables under study

Name	Operational definition	Categories	N_j	n_i	$\%_i$
Urban size	Size of the urban units	Small town (below 50 000 inhabitants)	11	254	61.6
		Medium town (50 000–199 999 inhabitants)	7	55	13.3
		Large town (200 000 inhabitants or more)	5	104	25.2
Public bed density	Density of public beds (per 1000 population) in the district	Low (below mean of districts)	9	56	13.7
		High (above mean of districts)	14	356	86.3
Private bed density	Density of private beds (per 1000 population) in the district	Low (below mean of districts)	14	173	42.0
		High (above mean of districts)	9	239	58.0
Poor households	Proportion of households below the poverty line in the NSS 52nd round urban units	Low (below mean of districts)	16	253	61.3
		High (above mean of districts)	7	159	38.7
Casual worker households	Proportion of households with casual work as main source of income in the NSS 52nd round urban units	Low (below mean of districts)	14	344	83.6
		High (above mean of districts)	9	68	16.4
<i>Pucca</i> housing	Proportion of households living in a house made of permanent material (<i>pucca</i>) in the NSS urban units	Low (below mean of districts)	4	41	10.0
		High (above mean of districts)	19	371	90.0

N_j = number of urban-level units.

n_i = number of individual-level units.

$\%_i$ = proportion of the individual-level sample.

Appendix 2. Individual-level variables under study

Name	Operational definition	Categories	n_i	$\%$
Illness episode	Reporting an illness during the previous 15 days			
Utilization of outpatient care	Having used any types of medical care as an outpatient (not hospitalized)	Yes	343	83.2
		No	69	16.8
Utilization of private source of care	Having used a private source of care (not from governmental institutions)	Private source of care	265	77.3
		Public source of care	78	22.7
Age	Age at time of survey	Below 2 years old	33	8.0
		2–17 years old	162	39.3
		18–49 years old	159	38.5
		50 years and older	58	14.2
Sex	Sex	Female	203	49.3
		Male	209	50.7
Caste	Coming from a scheduled caste or scheduled tribe household	Scheduled caste or tribe	31	7.5
		Other castes	381	92.5
Poverty	Household with monthly per capita (non-adjusted and adjusted) consumption expenditure below the poverty line	Very poor	28	6.9
		Moderately poor	62	15.1
		Non-poor (above poverty line)	322	78.0
Employment	Type of employment reported as main source of income in the household	Casual work	138	33.5
		Non casual work	273	66.5
Confinement to bed	Confinement to bed for at least 1 day during the illness episode	Bedridden	117	28.3
		No confinement to bed	296	71.7
Previous hospitalization	Having had an hospitalization during the last 365 days	Previous hospitalization	41	9.9
		No previous hospitalization	371	90.1
Illness status	Status of illness at time of survey	Ongoing illness	150	36.4
		Illness resolved	262	63.6
Chronic disease	Diseases lasting for more than 30 days	Acute illness	395	95.7
		Chronic illness	18	4.3