Paying for and receiving benefits from health services in South Africa: is the health system equitable?

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There is a global challenge for health systems to ensure equity in both the delivery and financing of health care. However, many African countries still do not have equitable health systems. Traditionally, equity in the delivery and the financing of health care are assessed separately, in what may be termed 'partial' analyses. The current debate on countries moving toward universal health systems, however, requires a holistic understanding of equity in both the delivery and the financing of health care. The number of studies combining these aspects to date is limited, especially in Africa. An assessment of overall health system equity involves assessing health care financing in relation to the principles of contributing to financing according to ability to pay and benefiting from health services according to need for care. Currently South Africa is considering major health systems restructuring toward a universal system. This paper examines together, for both the public and the private sectors, equity in the delivery and financing of health care in South Africa. Using nationally representative datasets and standard methodologies for assessing progressivity in health care financing and benefit incidence, this paper reports an overall progressive financing system but a pro-rich distribution of health care benefits. The progressive financing system is driven mainly by progressive private medical schemes that cover a small portion of the population, mainly the rich. The distribution of health care benefits is not only pro-rich, but also not in line with the need for health care; richer groups receive a far greater share of service benefits within both public and private sectors despite having a relatively lower share of the ill-health burden. The importance of the findings for the design of a universal health system is discussed.

Keywords   Health system, benefit incidence analysis, progressivity, health care financing, health care benefits, South Africa

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KEY MESSAGES

- Total health care financing in South Africa is progressive; richer socio-economic groups spend more of their consumption expenditure on health care than poorer groups.
- The overall distribution of both public and private sector health care benefits in South Africa is pro-rich; poorer socio-economic groups are benefiting less from the use of health services than richer groups.

- The overall distribution of health care benefits is also not in line with the need for care; poorer groups that indicate poorer self-assessed health status receive fewer health care benefits compared with richer groups with higher self-assessed health status.

- The South African health system, considering both the delivery and financing of health care, is inequitable.

Introduction

Globally, a key challenge for health systems is to ensure equity in both the delivery and the financing of health care. However, there is evidence of considerable inequity in many African health systems (Castro-Leal et al. 2000; McIntyre and Gilson 2002; Schellenberg et al. 2003; Gwatkin et al. 2004; Orem and Zikusooka 2010). Attempts to understand the extent of inequities in both the delivery and financing of health systems are often 'partial' in the sense that they focus on either service delivery (through, for instance, benefit incidence analysis) or health care financing (through, for instance, studying the progressivity of health care financing). While each is important, they do not provide an integrated picture of both elements of the health system through a simultaneous or linked analysis. Either of these analyses may be misleading if undertaken in isolation from the other (Huang et al. 2007). While similar analyses have been performed previously in some selected developed countries in Europe and the United States (Christiansen 1993; Gottschalk and Wolfe 1993; Lachaud and Rochaix 1993; Leu and Gerfin 1993; Nolan 1993; O'Donnell et al. 1993; Paci and Wagstaff 1993; Pereira and Pinto 1993; Rodríguez et al. 1993; van Doorslaer et al. 1993), in developing countries, especially, a strong case can be made for the two analyses to be very much linked (van Doorslaer and O'Donnell 2008).

Recent studies in Hong Kong and Taiwan have attempted to integrate both health financing and delivery analyses (Huang et al. 2007; Leung et al. 2009). However, in Hong Kong only the finance and delivery of *public* care were compared, in addition to comparing public and private *delivery* of care. In Taiwan, the focus was on redistributive effects by considering the net benefits from social health insurance programmes. There is limited literature showing and comparing the overall distribution of *total* health care finance and *total* benefits from the delivery of health care through considering both public and private sectors within a single country.

In South Africa, health care is financed through a combination of private and public sources: general tax, private insurance and out-of-pocket payments. These have different relative magnitudes but the private sources dominate (McIntyre et al. 2008; Ataguba and Akazili 2010). Also, health care is delivered through both private and public sectors. A large fraction of the population is dependent entirely on the publicly funded system for health care, while private funding covers only those who can afford to pay. The latter are mainly those who purchase private health insurance cover (known as medical schemes in South Africa; see Box 1) (Ataguba and Akazili 2010). There are some indications that inequities exist in the health system. In 2005, for instance, general tax revenue (public finance), which accounted for about 43% of total health care finance, was used to cater for about 68% of the population dependent entirely on the public sector, and to subsidize care

Box 1 Key characteristics of private health insurance (medical schemes) in South Africa

- Membership of medical schemes is 'voluntary' in the sense that there is no legislation requiring such membership, but it is frequently a condition of service (i.e. most formal sector employers require their staff to take out medical scheme cover).
- Membership is almost exclusively formal sector workers, and sometimes their dependants.
- Schemes are meant to be 'not-for-profit', but the large administrators that run the schemes on a day-to-day basis are for-profit organizations.
- All schemes have to cover the prescribed minimum benefit (PMB) package, which includes some hospital-based interventions and certain chronic diseases. Each scheme offers a number of alternative benefit options, which include the PMBs plus different combinations of other services.
- Contributions are linked to the benefit option selected (i.e. a flat amount is payable per member for that benefit option). A few 'closed' schemes (i.e. whose membership is restricted to a specific company or industry) differentiate contributions by benefit option and income level (i.e. have 2–3 income bands for which the flat contribution per option is differentiated).
- Medical schemes provide substitutive cover (i.e. scheme membership is primarily seen as a means of gaining access to private sector services). Members may use public sector services, but their scheme is expected to pay for such care. However, this seldom occurs.
- Schemes pay providers on a fee-for-service basis, but members face large co-payments frequently.

for the insured minority. Private insurance contributions that accounted for about 44% of total health care finance only covered about 16% of the *privately insured* population who are the richest group (McIntyre et al. 2007). The public health system is overburdened by the volume of users and there are ongoing debates about the fairness of the distribution of resources between the public and private sectors relative to the population served by each (McIntyre et al. 2007; Ataguba and Akazili 2010).

Recently, South Africa has begun considering major health system restructuring to move towards a universal system for providing financial risk protection and promoting equity in access to needed care. To support this, evidence is needed on the current situation, including the distribution of the burden of health care financing and benefits from the delivery

of health care. This will provide an overview of the current performance of the health system in meeting its core objectives. In this regard, this paper brings together analyses on benefit incidence and progressivity of health finance. Specifically, the paper explores how the current health system is performing in terms of equitable access to care and fairness in financial contribution. It examines the distribution across relevant groupings of health care payments and benefits from using health services in the overall health system, i.e. including both the public and the private health sectors.

Methods

Two main analyses were performed. One relates to determining the progressivity of the health care financing system and the other to assessing how equitable the overall delivery system is. Also, two main data sources were used. The 2005/2006 Income and Expenditure Survey (IES) data were used for the financing analysis (Statistics South Africa 2008). The IES was conducted by the national statistical office (Statistics South Africa). It is a nationally representative survey of 21 144 households and contains information on household and individual income, savings and spending. The diary method was used in the last month of the survey in addition to the standard household questionnaire that covered 11 months prior to the actual survey month. The delivery system analysis used data obtained from another nationally representative household survey (the SACBIA survey).[1] The SACBIA survey was undertaken to obtain accurate data on health service utilization as no routinely conducted survey collects such data. Data were collected between April and July 2008 in all nine South African provinces using a two-stage sampling procedure. To ensure a nationally representative sample, enumeration areas (EAs) were stratified by province, type of settlement (farm, informal settlement, tribal settlement, small holding and urban settlement) and population group (Black African, Coloured, Indian and White[2]). The first stage selected 960 Enumerator Areas (EAs) or the primary sampling units (PSUs) with a probability proportional to the size (PPS) of the EA in each stratum. In the second stage, five households were interviewed within each EA. The total sample size was 4800 households.

Socio-economic status of households was measured using household per adult consumption expenditure. Following Deaton (1997), the adult equivalence scale used was:

$$AE = (s_A + \Phi s_K)^\theta \text{ for } \theta \geq 0, 0 \leq \Phi \leq 1 \tag{1}$$

where s_A is the number of adults in the household; s_K is the number of children, Φ is the cost of children [a measure of the weight accorded to children relative to adults (Banks and Johnson 1994)] and θ represents economies of scale. Following the recommendation in Deaton and Zaidi (2002) we set $\Phi = 0.5$ and $\theta = 0.75$. Sensitivity analysis found that replacing the adult equivalent scale by a per capita scale did not significantly change the results.[3] Because the SACBIA survey collected data only on monthly expenditure, annual consumption expenditure was generated using the consumption regression approach (see O'Donnell et al. 2008: 72). This linked similar and relevant variables in the SACBIA data set to the IES, which contains

information on annual consumption expenditure. Analyses were conducted using Stata® 11.

Assessing progressivity in health care financing

Three broad financing sources were identified (general tax, medical scheme contributions and out-of-pocket payments). The contribution of individual households to these sources was estimated from the IES data. Table 1 provides an overview of how these contributions were extracted for each source. For corporate income tax, various assumptions on tax shifting between shareholders and consumers were applied. For general taxes, only the proportion that is allocated to the health sector was considered. Where the estimates of tax revenue calculated from the IES did not equal revenue reported by the National Treasury, the difference was apportioned to households based on their estimated proportional share of contribution to each tax (see Borghi et al. 2009). A similar procedure was performed for medical scheme contributions.

Two methods were used to assess progressivity. The first method simply categorized households into five quintiles, and computed the share of each quintile's consumption expenditure on health care via all the financing mechanisms; and the second used the Kakwani index to formally assess the extent of progressivity (Kakwani 1977). Tests of dominance were also performed to ascertain which financing mechanism was statistically progressive or regressive (Davidson and Duclos 1997).

Assessing distribution of health care benefits

In order to assess equity in the delivery of health services, the benefits, in monetary terms, of health care utilization that accrue to individuals in various socio-economic groups (SEGs) are estimated using the methodology of benefit incidence analysis (BIA). Historically, BIA has been applied to determine the distribution of the public subsidy for health care (i.e. government spending on health services less user fee payments by individual service users).[4] Here, we have used the same basic methodology but applied it to a wide range of private and public services and levels of care. The BIA method applied here involved several steps (McIntyre and Ataguba 2011):

- selecting a measure of living standards or socio-economic status,
- estimating the utilization rates of different types of health services (public and private) by SEGs,
- computing the unit cost for each type of health service,
- obtaining the monetary worth of benefits by multiplying the utilization rates by the unit cost of each type of service for each SEG,
- aggregating the monetary benefits of utilization across different types of health service for each SEG, and
- comparing the distribution of health service benefits to a distribution of socio-economic status and a distribution of relative need for care.

Concentration indices and statistical dominance tests were used to describe the extent of pro-poorness (or pro-richness) in the distribution of the health service benefits.

The types of services (inpatient and outpatient) considered included primary level clinics and community health centres, district hospitals, regional hospitals, and provincial and central

Table 1 Summary of how various components of health financing were extracted

Component	Basic computation technique
Taxes[a]	
Personal income tax *(12% of total health finance)*	Apply the appropriate tax thresholds, tax rate and rebates to the gross income of individuals within each household within the taxable range.
Corporate income tax *(10% of total health finance)*	Apportion total corporate tax receipts reported by the Treasury to households based on different assumptions of tax shifting in terms of percentage borne by shareholders (identified as those who report earning dividends) and that by households through consumption. As there was no prior research that provides a concrete basis for apportioning, the scenarios considered here ranged from two extremes: that shareholders/capital owners bear the full burden of the tax, and that consumers bear the full burden, with variation within these ranges in 10% increments: (100%:0%), (90%:10%), . . . , (0%:100%). The results in this paper are based on the assumption of 50%:50% or equal sharing of the economic burden unless otherwise stated.
Value Added Tax (VAT) *(10.8% of total health finance)*	The VAT rate is applied to expenditure on goods and services that are standard rated, i.e. excluding the zero-rated and exempted goods.
Fuel levy *(2% of total health finance)*	Fuel is consumed by households (personal or public transportation) as well as by corporate or industrial users, so estimation involved a process of generating the component attributable to public transport users, personal transport users and users in businesses. We assumed that the fuel levy is shifted to consumers reporting expenditure on minibus taxis, buses and other types of public transport. Fuel tax accruing to businesses and corporate users is also assumed to be passed forward onto consumers. Because we could not directly estimate from the dataset the component attributed to corporate or industrial users, we assumed that the difference between the fuel levy component accounted for by private and public transport users and that reported by National Treasury is attributable to industrial users.
Excise tax *(1.5% of total health finance)*	For cigarettes, the tax rate was applied to expenditure on cigarette products. For beer, wine and spirits, reported expenditure on these products was translated into estimated quantities (litres) using average retail prices; the rate per litre was then applied.
Others *(4% of total health finance)*	Not estimated but includes taxes on property and unidentified levies, stamp duties and fines, air departure tax and skills development levy.
Health insurance[b]	
Medical schemes (private) *(45% of total health finance)*	Expenditure on medical scheme premiums by households was combined with employers' contributions on behalf of members of the household.
Out-of-pocket payment[c]	
OOP payments *(14% of total health finance)*	Household expenditure on medicines, consultations, treatments and procedures were summed.

Notes: [a]Taxes make up about 40% of total health care finance; [b]Medical scheme contributions make up about 45%; [c] Out-of-pocket payments make up about 14%.

hospitals for public sector services; and general practitioners (GPs), specialists, retail pharmacies, private dentists and private hospitals for private sector services. To account for seasonal variations in the utilization of health services, utilization rates of outpatient services were annualized and adjusted using seasonality indices (see McIntyre and Ataguba 2011 for a discussion on the seasonal adjustment process). Annualizing utilization figures by multiplying monthly utilization by 12 may underestimate (or overestimate) annual utilization if health service utilization in the month of reporting is less than (or greater than) actual average annual utilization. For public outpatient services, the seasonality indices were generated from the South African District Health Information System (DHIS), and for private services the indices were generated from data on utilization patterns for each month provided by the largest medical scheme administrators.

Unit costs of inpatient and outpatient care in public sector hospitals were obtained by dividing the total recurrent expenditure at each hospital level by the number of patient day equivalents (which combine in- and out-patient use in one measure). Ratios of the cost of an inpatient day to an outpatient visit at

Table 2 Summary of unit costs in public facilities

	Unit cost (2006 Rand)	
	/Inpatient day	/Outpatient visit
District hospital	849.17	315.04
Regional hospital	1040.20	434.80
Central/Provincial tertiary hospitals	1441.01	809.85
Specialized hospital	487.18	313.26

Source: Ataguba (forthcoming).

different levels of care were obtained by fitting regression models that relate recurrent expenditure to health care utilization (outpatient and inpatient) in all public hospitals at different levels in South Africa, after controlling for the relative size of each hospital. The cost of one outpatient visit was equivalent to 0.37 of the cost of an inpatient day in district hospitals, 0.42 in regional hospitals and 0.56 in the case of provincial or central hospitals (Ataguba, forthcoming). The respective unit costs are presented in Table 2. In the case of

clinics and community health centres, the unit cost was simply calculated as expenditure divided by total number of visits. For private sector services, unit cost (or unit price) (see McIntyre and Ataguba 2011) estimates were based on data provided by the largest medical scheme administrators. In order to obtain this, for each private health service (e.g. admission in a private hospital), the total monetary value of claims (as opposed to amount paid by scheme as schemes require out-of-pocket co-payments) pertaining to this service was divided by the total number of visits or hospital admissions for the same service.

It is important to briefly comment on the use of unit costs in the case of public sector services but using what are effectively 'prices' for private sector services. Unfortunately, cost data are not available for private sector services; private providers are not willing to make this information available due to its competitive value and concerns about its potential use in price regulation. Even if there were not this data constraint, we would argue that it is appropriate to use price data for the private sector. Unit costs for even public sector services include an element of private corporation profits, for example the profit component within some inputs such as pharmaceutical and other medical supplies. The prices charged by private practitioners for consultations and procedures reflect their earnings expectations, which we believe are appropriate to take into account. In addition, the price of private sector services is taken into account on the financing incidence side of the analysis and should also be on the benefit incidence side; if prices increase, so will private insurance contributions (as medical schemes operate on a 'pay-as-you-go' basis). What is important to note is that the term 'benefit' does not imply a health benefit (e.g. the same service provided in a public facility at much lower cost than that charged by a private facility does not necessarily imply a worse health outcome). Instead, it is simply a reflection of the value of financial resources devoted to health services that are used by different groups. In the context of considering health system reforms, it is important to assess how resources

are distributed across different types of services and who gets the benefits from using these services.

Measuring the need for health care across SEGs presents some difficulties (McIntyre and Ataguba 2011). In this paper, the need for care is measured using responses to questions on self-assessed health status. Responses were dichotomized such that good health is recorded if the response to the question on health status is above 'fair' and it is recorded as bad health if the response is 'fair' or below. Relative share of need was then obtained as the distribution of bad health across quintiles.

Results

The analysis of health care financing progressivity is summarized in Figure 1. Here the bars indicate the extent of the burden of different financing sources (as a percentage of consumption expenditure) on each quintile of households. The incidence of general tax overall is progressive. This is because richer groups pay a greater proportion of their consumption expenditure in taxes than poorer groups. The overall tax incidence, however, is less progressive than the personal income tax component. This is because the regressivity of VAT, the fuel levy and excise duties to some extent offset the progressivity of personal income tax when combining all taxes. Medical scheme contributions are also a progressive source of financing health care in South Africa, when viewed across the entire population. Their burden on the poorest quintile is statistically negligible because only the richer SEGs pay for cover. Out-of-pocket payments are regressive as the poorer quintiles bear higher burdens than the rich.

The relative progressivity presented in Figure 1 does not indicate the extent to which each financing mechanism is progressive (or regressive). In Table 3 the results are presented of a formal assessment of progressivity using concentration indices and Kakwani indices (KI). The results of the test of dominance of the concentration curves and the Lorenz curve
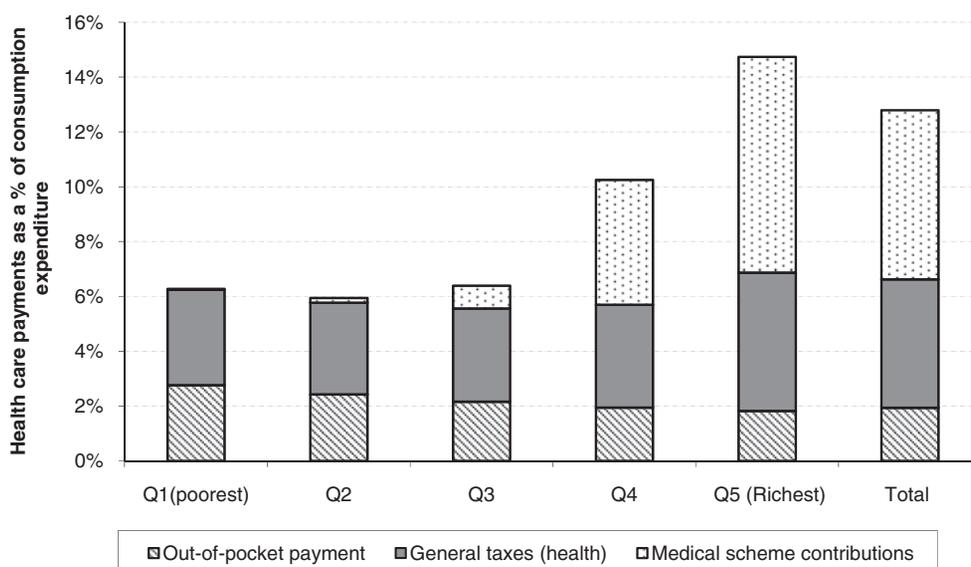

Figure 1 The relative burden of health care payments on households

Table 3 The progressivity of different health financing sources

Financing source	Scenario	Concentration index	Kakwani Index	Dominance test[c]
Expenditure[a]		0.6682**		
Taxes				
Personal income tax		0.8876**	0.2194**	Dom2
Corporate income tax (CIT)	A	0.7190**	0.0509	n-Dom
	B	0.8709**	0.2027	Dom2
	C	0.5332**	−0.1350*	Dom1
Fuel levy		0.5652**	−0.1029**	Dom1
Value Added Tax (VAT)		0.5592**	−0.1089**	Dom1
Excise taxes		0.3431**	−0.3250**	Dom1
Total tax[b]	A	–	0.014	–
	B	–	0.031	–
	C	–	−0.007	–
Out-of-pocket		0.6234**	−0.0448	Dom1
Private health insurance (across entire population)		0.8102**	0.1420**	n-Dom
Private health insurance (across insured population only)		0.2489**	−0.2270**	Dom1
Total private		–	**0.0576**	–
Total	A	–	**0.0718**	–
	B	–	**0.0890**	–
	C	–	**0.0514**	–

Notes: Scenario A = a 50%:50% allocation of CIT between shareholders and consumers; B = a 0%:100% split of CIT between consumers and shareholders, respectively; C = a 100%:0% split of CIT between consumers and shareholders, respectively.
[a]The Gini index of inequality is shown.
[b]This is the same as total public financing. Other tax revenue not included in the disaggregated tax categories listed in this table is equivalent to about 4% of total tax revenue. This tax revenue was allocated across households on the basis of the weighted average of all allocated taxes.
[c]Dom1 = the concentration curve dominates the Lorenz curve; Dom2 = the Lorenz curve dominates the concentration curve; n-Dom = non-dominance or curves crossing.
*,** statistically significant at 5% and 1%, respectively.

(i.e. consumption expenditure share) are also presented. All the concentration indices are positive and statistically different from zero at conventional levels. The Kakwani index of progressivity indicates that personal income tax (KI = 0.22), private health insurance (KI = 0.14) and corporate income tax (excluding the case where 100% of the burden is borne by consumers) are progressive. It should be noted, however, that private health insurance contributions are regressive within the insured group (KI = −0.227). As expected, the relative progressivity of corporate income tax changes depending on the assumption of economic incidence. In fact it is regressive (with KI = −0.14) when the economic incidence rests entirely on consumers. The rest of the financing sources are regressive. The most regressive source is excise taxes (KI = −0.33) and the most progressive is personal income tax. Overall, as presented in Figure 1, general taxes are marginally progressive (assuming less than 100% of the burden of corporate income tax is borne by consumers) due to the combined regressivity of excise tax, fuel levy and VAT. As shown in Table 3, irrespective of the assumption made about the economic incidence of corporate income tax, health care financing overall in South Africa is progressive. The results for each financing source are confirmed by the test of statistical dominance of the Lorenz curve and the concentration curve, except for private health insurance and corporate income tax scenario A where the curves cross.

With respect to health care delivery, Figure 2 presents the distribution of health care benefits across quintiles for private, public and combined private and public services. The figure shows that the distribution of benefits from both public and private services are 'pro-rich'. This signifies that the richer groups receive a higher share of benefits compared with the poorer groups. The extent of pro-richness is particularly marked for benefits from private services and the combined private and public benefits. For the use of private services, the richest 20% of the population enjoy over 55% of the total benefits. Overall, they account for about 40% of total health care benefits in South Africa.

Figure 2 does not provide an exact measure of the extent of pro-richness. Table 4 presents concentration indices, disaggregated across the various services (public and private), for both inpatient and outpatient services. The results of the dominance test of the concentration curve and the line of equality are also presented. From this table, and from the concentration indices (CI), the only public health services with a pro-poor distribution are visits to clinics and community health centres (CI = −0.13), visits to district hospitals (CI = −0.22) and admissions in district hospitals (CI = −0.14). These represent lower levels of care. All other public sector outpatient and inpatient services, and total public services, are pro-rich. This is particularly the case in relation to provincial and central
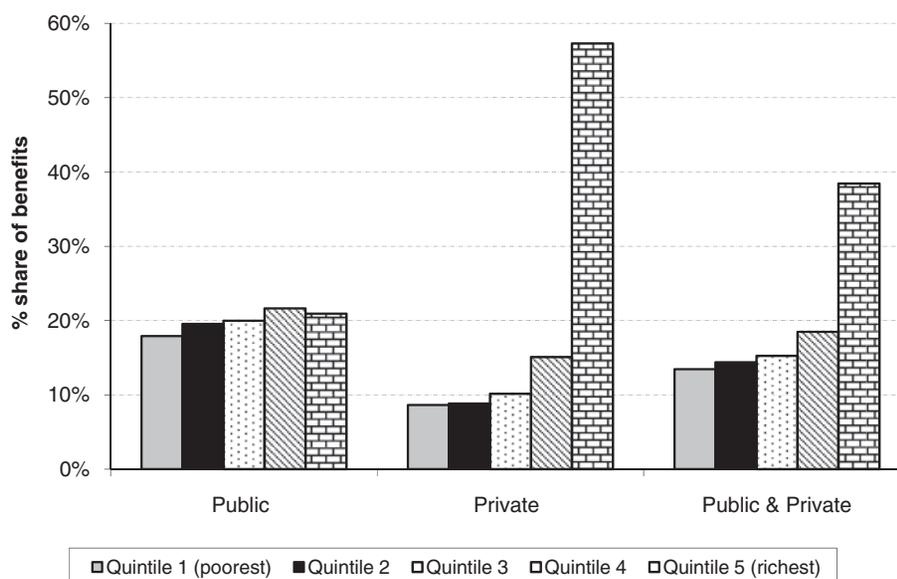
Figure 2 Distribution of health care benefits

Table 4 Concentration indices and dominance test results for different health services

Type of provider	Outpatient services		Inpatient services	
	Concentration index	Dominance test	Concentration index	Dominance test
Public				
Clinic/Community health centre	−0.134***	Dom2	–	–
District hospital	−0.224***	Dom2	−0.140**	Dom2
Regional hospital	0.014	n-Dom	0.047	n-Dom
Provincial/central hospital	0.231***	Dom1	0.340***	Dom1
All public sector hospitals	**0.015**	**n-Dom**	**0.112****	**Dom1**
TOTAL public facilities	**−0.021**	**n-Dom**	**0.112****	**Dom1**
		0.064 (Dom1)		
Private				
GP visit	0.409***	Dom1	–	–
Specialist visit	0.139*	Dom1	–	–
Dentist visit	0.609***	Dom1	–	–
Pharmacy visit	0.586***	Dom1	–	–
Private hospital	0.369***	Dom1	0.532***	Dom1
TOTAL private facilities	**0.383****	**Dom1**	**0.532****	**Dom1**
		0.424* (Dom1)**		
All				
TOTAL (public and private)	**0.198****	**Dom1**	**0.268****	**Dom1**
All health services (inpatient and outpatient)		**0.223*** (Dom1)**		

Notes: *,**,*** statistically significant at 10%, 5% and 1% level of significance, respectively.

Dom1 = the 45-degree line dominates the concentration curve.

Dom2 = the concentration curve dominates the 45-degree line.

n-Dom = non-dominance or curves crossing.

hospital services (CI = 0.23 for outpatients and CI = 0.34 for inpatients). The same findings are obtained from the dominance test results except for regional hospital services where the curves cross.

Also, as shown in Table 4, the distribution of benefits from all private health services (outpatient and inpatient) is pro-rich. Richer groups benefit more from the use of private health services than the poor. The most pro-rich distributions of
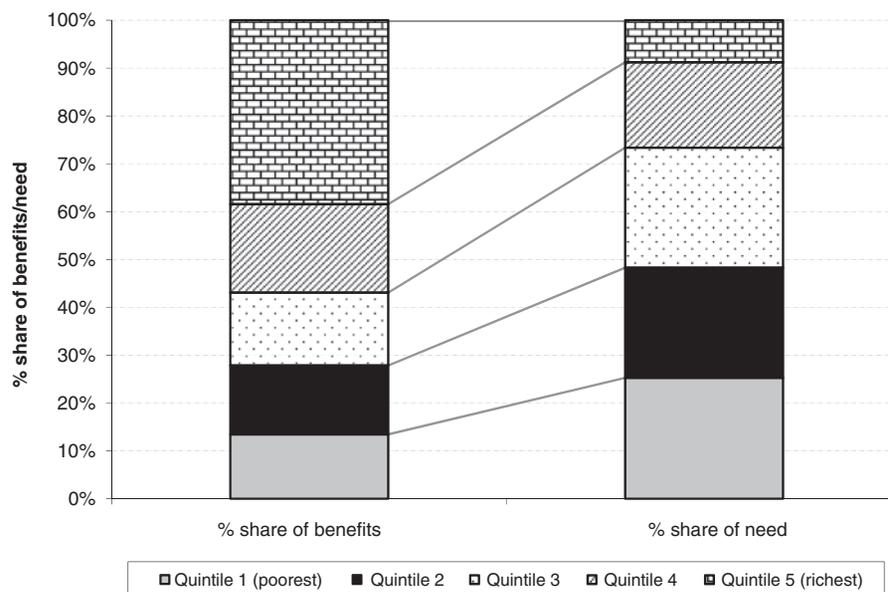
Figure 3 Distribution of health benefits in comparison to need for health care

benefits are visits to dentists (CI = 0.61), retail pharmacies (CI = 0.59) and private hospital inpatient services (CI = 0.53). For all private services, the statistical test of dominance concludes that the pro-rich pattern is statistically significant. Because all the private health services show a pro-rich distribution pattern, overall benefits from the use of both private outpatient and inpatient health services are also pro-rich.

Combining both private and public inpatient and outpatient health services, the concentration indices (CI = 0.20 for outpatients and CI = 0.27 for inpatients) in Table 4 indicate pro-rich distributions. This result is also confirmed by the test of dominance as the concentration curves are dominated by the line of equality in both cases. Overall the distribution of health care benefits in South Africa is pro-rich (CI = 0.22). This is also the case for overall public services (CI = 0.064) and overall private services (CI = 0.424).

Benefit incidence results are usually simply presented as the distribution of benefits across SEGs. However, there is a strong justification for comparing the distribution of benefits to a distribution of the need for health care (McIntyre and Ataguba 2011), as equity is defined as the utilization of services (and the resources devoted to delivering the services used) in line with need. In Figure 3 we compare each SEG's share of total benefits from using health services (combined public and private sector) with their relative share of need for health services, measured through self-assessed health status. Both sets of data (service use and self-assessed health status) were drawn from the same household survey dataset. The figure indicates that health care benefits are not distributed in line with need for health services in South Africa. As some may not feel that self-assessed health is a sufficiently rigorous indicator of health care need, we also analysed other recent household survey datasets, which revealed that lower income quintiles bear the greatest burden of all forms of disability, communicable diseases [including sexually transmitted disease, human immunodeficiency virus (HIV), tuberculosis and diarrhoea], trauma and, increasingly,

non-communicable diseases (particularly hypertension) (Ataguba et al. 2011). From this combined evidence, it is clear that poorer SEGs bear a greater burden of ill-health than richer groups yet are receiving a far smaller share of service benefits than richer SEGs.

Discussion

This study has shown that health care financing in South Africa is progressive. There is a mildly progressive tax system, largely due to strongly progressive personal income tax, although its progressivity is partially offset by the regressivity of VAT, fuel levies and excise duties. The most progressive component of the overall health care financing system in South Africa is contributions to private health insurance schemes. This is because only richer groups belong to schemes; 71% of medical scheme members are in the richest quintile and 16% are from quintile 4. As medical schemes account for nearly half of total health care financing, they impact on the relative progressivity of overall health care financing. Thus, while the Kakwani Index for general tax revenue is 0.014, the index for overall health care financing in South Africa is 0.072 due to the Kakwani index for medical scheme contributions being 0.142 and such contributions comprising nearly half of all health care financing.

A key problem, however, is that this large share benefits only 16% of the population, namely those who are members of these medical schemes. Thus, although higher income groups are bearing a greater burden of health care financing than lower income groups, much of this funding is exclusively for their own benefit. Further the results show that among the insured, contributions are regressive. This means they impose a higher burden on the 'poorer' insured than on the 'richer' insured members. The magnitude of funding from and for this 16% of the population is of concern for a number of reasons. There are concerns about whether those covered by private insurance

schemes are receiving value for money and that it is becoming increasingly unaffordable for South Africans to belong to these schemes. In 2007, contributions for a principal member plus an average of 1.65 dependants, if only one family member is working in the formal sector, were equivalent to 30% of average formal sector salaries (McIntyre 2010). The sustainability of this financing burden is questionable, particularly in the context of a regressive distribution of payments across medical scheme members. Furthermore, the existence of a pool of funds that is such a large share of total health care funds inevitably impacts on the distribution of health care professionals between the public and private health sectors, and hence contributes to a skewed distribution of service benefits.

Progressive health care financing, or contributing to health care financing according to ability to pay, is only one component of the generally accepted understanding of a fair and equitable health care system. The other component of health system equity relates to how the benefits from health services are distributed. If benefits are received according to a person's ability to pay without any consideration for the need for health care, then we may not describe the distribution of benefits as fair (Ataguba and Akazili 2010).

The study shows that the distribution of benefits from using health services is pro-rich, especially in terms of the use of private sector services, which are almost exclusively used by those covered by medical schemes. However, even public sector services are pro-rich, particularly in the case of services provided at the highest levels of care. The only services which are pro-poor are primary care clinics and community health centres, as well as district hospitals. This distribution is driven largely by the greater use of primary care services by poorer groups, not least of all because of the greater geographic access to these services compared with higher levels of hospitals, and hence, lower transport costs.

In terms of overall health system performance from an equity perspective, assessing this relative to the principles of contributing to health care financing according to ability to pay and benefiting from health services according to need, the major problem within the South African health system appears to be on the service benefit side. In particular, richer groups receive a far greater share of service benefits within both the public and the private sectors relative to their share of the ill-health burden. This is not only in terms of self-assessed health status as reflected in Figure 3, but also in relation to infectious diseases such as tuberculosis (Harling et al. 2008; Ataguba et al. 2011) and many non-communicable diseases and disability (Bradshaw and Steyn 2001; Ataguba et al. 2011). While there is no 'one-to-one' relationship such that a 10% greater share of ill-health for a particular group implies that service benefits should be 10% greater, the distribution of service benefits in South Africa as depicted in Figure 3 is not in line with health needs across SEGs and cannot be described as equitable.

There are a number of factors influencing this benefit incidence pattern, which largely relate to service access barriers (see Macha et al. 2012). It is critical to address these factors if the benefit incidence of health services in South Africa is to improve. There are disparities in the distribution of public health care facilities and funding across geographic areas, both between provinces and between rural and urban areas (McIntyre et al. 2002; Stuckler et al. 2011). In addition, higher level public hospitals and all types of private providers are heavily concentrated in urban areas. Possible measures would include improving geographic access to health facilities, such as through subsidized patient transport systems for referrals, and ensuring routine availability of essential medicines in all health facilities. However, it is also important to recognize that the structure of health care financing contributes to this skewed benefit incidence pattern, namely having two very separate pools of funding (general tax funding and private medical schemes) of roughly equal size but serving very different sized groups of the population.

While some may argue that the private sector should be judged by a different 'equity' rule (e.g. distribution of benefits from using services according to ability to pay), we would question this approach. Medical schemes in South Africa were initially governed by the Friendly Societies Act (of 1956) and, as the name suggests, had a strong social solidarity element. The regulatory framework for medical schemes tries to maintain this initial vision through mechanisms such as requiring contributions to be community-rated (McIntyre and McLeod 2012). Although membership is legally voluntary, it is de facto mandatory for many as it is a condition of service for most employers. Under these circumstances, the equity principle of benefiting from scheme resources according to relative need for health care is not out of place. Thus, the very strong pro-rich distribution of private sector services used by scheme members is of concern. Also, in the context of the global drive to pursue universal health systems, which require reforms to the way in which health care funds are generated and pooled as well as how services are purchased, it is important to consider all elements of the current health system through the lens of the principles underpinning universal coverage (i.e. payment according to ability to pay and benefit according to need).

As indicated earlier, very few studies have been similarly comprehensive in terms of evaluating the financing and benefit incidence of both the public and the private health sectors. One of the only other studies of this nature was undertaken in Hong Kong (Leung et al. 2009). This study noted that horizontal inequity in the delivery of health care was due to the very pro-rich pattern of use of private sector services, funded from private health insurance and out-of-pocket payments by high-income groups. Of particular note in the context of the global emphasis on pursuing universal health coverage, Leung et al. (2009: 50) predicted that reducing fragmentation in financing mechanisms through introducing a single purchaser in Hong Kong would be 'effective in realising horizontal equity in the delivery of care'. This has considerable relevance to South Africa, where national health insurance is being proposed, with one of the key motivations being to promote a more equitable distribution of benefits of health service use, i.e. use that is in line with the distribution of health care need.

Conclusions

The South African health system, considering the financing and delivery of health care, is inequitable. Even though formal assessment of the financing system shows a progressive

pattern, the highly fragmented and compartmentalized financing mechanisms still generate inequity. The distribution of health services, particularly public health services which should disproportionately benefit the poor, is pro-rich. In relation to need for care, the maldistribution of benefits is even more marked as the poor, with a relatively greater need for care, are receiving a smaller share of total health care benefits. While both public and private sectors exist in South Africa, and each accounts for approximately half of total health care financing, the population served entirely by the private sector, particularly via medical scheme coverage, is small and skewed in favour of the richest groups. There is therefore a need to devise a means of ensuring equity in both the delivery and the financing of health care in South Africa. In this regard, and considering the move towards a universal health system that is currently on the agenda in South Africa, the findings in this paper provide insights of relevance to designing a system that achieves both fairness in financial contribution and utilization of health services according to need.

Funding

Conflict of interest

The authors have no conflicts of interest to declare.

Endnotes

[1] The SACBIA (South African Consortium for Benefit Incidence Analysis) survey was a collaborative initiative by the Health Economics Unit, University of Cape Town; Centre for Health Policy, University of the Witwatersrand; the National Department of Health; and the London School of Hygiene and Tropical Medicine. SACBIA was funded by the European Union and data were collected by the Community Agency for Social Enquiry (CASE).

[2] The use of the terms 'African', 'coloured', 'Indian' and 'white' reflects a statutory stratification of the South African population in terms of the former Population Registration Act. The use of these terms in this paper does not imply any legitimacy of this racist terminology.

[3] The results based on per capita expenditure are available from the authors upon request.

[4] Recently Wagstaff (2011) has shown that the treatment of user fees could affect BIA conclusions noting that user fees should be used as an indicator of the 'costliness' of the health service. This is the case if user fees are paid when the effective cost of providing the service exceeds that which the government can cover out of general taxes.

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