

Health Seeking Behavior in Northern KwaZulu-Natal

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Abstract

We examine patterns of health seeking behavior prior to death among 1282 individuals who lived in the Umkhanyakude District of Northern KwaZulu-Natal. Information on the health care choices of these individuals, who died between January 2003 and July 2004, was gathered after their deaths from their primary care-givers. We examine choices made concerning public and private medicine, western and traditional medicine, and non-prescribed self-medication. We find that virtually all adults who were ill prior to death sought treatment from a Western medical provider, visiting either a public clinic or a private doctor. In this district, which is predominantly poor, ninety percent of adults who sought treatment from a public clinic also visited a private doctor. Fifty percent also sought treatment from a traditional healer, suggesting that traditional medicine is seen as a complement to, rather than a substitute for, Western care. Better educated people who were ill for less than a month before dying were significantly more likely to visit a private doctor, while those least well educated were more likely to visit a traditional healer. Controlling for length of illness, better educated and wealthier people sought care from a greater range of providers, and spent significantly more on their treatment.

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Introduction and background

South Africa is currently struggling with both a deepening of its AIDS crisis and a heavy chronic disease burden. As a result, an understanding of how people seek medical care has become an ever larger priority. In South Africa, health services are offered through multiple, sometimes overlapping channels, echoing what is true in many parts of the developing world (Develay et al 1996, Ahmed et al 2000, Baume et al 2000). Quantifying the extent to which ill people are presenting both at public clinics and at private doctors' offices, and at the same time are seeking cures from traditional healers and non-prescribed treatments from pharmacies, is necessary if informed choices are to be made, for example, in designing an anti-retroviral therapy (ART) delivery program. Successful adherence to ART will be influenced by the ways in which ill people interact with health care systems.

In this paper, we examine patterns of health seeking behavior prior to death among 1282 individuals who lived in the Umkhanyakude District of Northern KwaZulu-Natal. Information on the health care choices and expenditures of these individuals, who died between January 2003 and July 2004, was gathered after their deaths from their primary care-giver (generally an adult in their household or a close relative). These data were collected through the Africa Centre for Health and Population Studies, which runs a longitudinal demographic surveillance system (DSS) in the District. Because the Africa Centre Demographic Information System (ACDIS) also collects information on the socioeconomic status of individuals and households, we can combine information on health seeking behavior with characteristics of the deceased, including educational attainment and household asset holding, to examine the extent to which differences in socioeconomic status lead to differences in health seeking behavior. We find significant

positive associations between individuals' socioeconomic status, measured using household assets, and individuals' educations and work histories, and their use of medical services. Not surprisingly, length of illness prior to death has a significant effect on the probability that medical attention is sought— particularly treatment from traditional healers and non-prescribed treatments—and on the amount spent on all types of medical care. Of those who died after a short illness, less well educated people were significantly more likely to have consulted a traditional healer than were those with more than 6 years of education, while better educated people were significantly more likely to have consulted a public doctor or clinic, or a private doctor.

Although it is understood that many people turn both to western medicine and traditional healers when ill, use of the latter has not been systematically quantified in South Africa (Ashforth 2004, page 51). We find that traditional healers were consulted by almost half of all ill people in our sample, and by nearly 60 percent of the young adults who died. Almost all of those who consulted traditional healers also consulted a Western medical practitioner. The cost of traditional care varies substantially, and can be very expensive: of those who visited both private doctors and traditional healers, more was spent on the latter.

Our data allow us to document and analyze the health choices made by persons in Northern KwaZulu-Natal who were mortally ill. These data are not appropriate for answering the larger question of health seeking behavior in the population at large. The use of medicines that kept people alive would have kept them out of our sample. However, given HIV prevalence rates in Northern KZN and the current lack of ART in this region, our data do provide information on the behavior of an important subset of the population.

The paper is organized as follows. We first introduce the Africa Centre Demographic Information System and our data collection effort on illness and death. We then lay out the patterns of health seeking behavior we find in these data, before turning to their determinants.

Data

Africa Centre Demographic Information System

Since January 2000, the Africa Centre Demographic Information System has been following approximately 85,000 individuals in 11,000 households in one of the poorest districts in KwaZulu-Natal. Since its inception, ACDIS has maintained a continual registration system of all individuals who are members of households in the surveillance area. Each homestead is visited twice annually, at which point information is updated on births, migrations, and deaths. The news of a death triggers a visit from a verbal autopsy nurse, who asks the deceased's primary caregiver a battery of questions about symptoms, places where care was sought, and about the death itself. Since October 2003, each verbal autopsy nurse has been accompanied by a fieldworker who, after the nurse has completed her questions, inquires about what was spent treating illness prior to death. Our analysis is based on 1282 deaths that occurred between January 2003 and July 2004.¹

We augment our illness and death data with information available through ACDIS on the socioeconomic status of the deceased and his or her household. The first Household Socio-Economic module (HSE1) was undertaken in the first half of 2001. Information was collected on individuals' educational attainment and household ownership of a variety of durable goods. Several recent studies have found asset ownership to be a significant correlate of health status

and health seeking behavior (see Gwatkin 2003 for a review), and in what follows we will use asset ownership as a marker of socioeconomic status.

Table 1 presents information on all members of the demographic surveillance area at the time of HSE1 data collection, and information on those whose deaths we have followed. On average, individuals who died were living in slightly poorer households when measured by household asset ownership, than were other members of the DSA.

Table 1 also presents information on the length of illness prior to death, for all deaths (column 2), and for the deaths of adults following an illness (column 3). Approximately 10 percent of all deaths were sudden. In such cases, treatment was often not sought. Among adults who died following an illness, a rough rule of thumb is that 20 percent of the deceased were ill for less than a month, and 20 percent between one and three months, three and six months, six to twelve months, and for more than a year. For those who were ill for more than a year, care-givers were asked to report on health seeking behaviors in the last year of life.

The population of the DSA is relatively young; almost half of all members are less than age 18. Those whose deaths we are following were older on average than the DSA as a whole (aged 37.2 years on average, in contrast with 23.3 years). Among children who died, 53 percent were under age 1, and 75 percent were under age 3. Care-seeking behavior for infants and young children is an important topic, but one that we believe deserves a separate analysis. For the remainder of our paper, we will focus on care-seeking behavior among 975 adults (ages 18 and above) who died after an illness.

To better understand the results that follow, we present a histogram of adult deaths following an illness, by age, in Figure 1. We find a bi-modal distribution, with an unusual first

mode at age 30, largely due to AIDS deaths, and a second more familiar mode at age 75.

Approximately 20 percent of the deaths we analyze are of persons who died in their 20s, 30 percent are of people who died in their 30s. Another 20 percent are of persons who died above the age of 60.

Health Seeking Behavior Prior to Death

Treatments chosen

Table 2 provides information on adults who died following an illness who sought treatment from public doctors or clinics, private doctors or clinics, traditional healers, and non-prescribed treatments. Column 1 presents the percent of adults seeking each type of treatment. Fully 88 percent of individuals sought care from a public doctor or clinic. Importantly, among adults who had fallen ill, 97 percent had some contact with Western medicine, either through a public clinic or a private doctor. This will matter in future efforts to reach persons who have HIV or AIDS-related illnesses: if the past is a guide, these persons will present either at a public clinic or at a private doctor's office, or both.

Our data also provide a quantitative look at treatment sought with traditional healers in South Africa. Half of all adults who died following an illness were reported to have seen a traditional healer. Virtually all of these individuals also saw a public or private doctor; in only 4 cases was it reported that an individual sought treatment from a traditional healer but not from a Western medical doctor. Services provided by traditional healers appear to be complements to, rather than substitutes for, those provided by public and private doctors.

Forty-six percent of individuals also purchased non-prescribed medications. Again, in all but 3 cases, these individuals also sought treatment from a Western doctor so that, as with traditional healers, non-prescribed treatments (such as home-cures, and vitamins) appear to be a complement to, rather than a substitute for, western medicine.

The age profile of treatment among adults who had fallen ill is displayed in the left panel of Figure 2, which presents the conditional expectation of choosing each type of treatment (public, private, traditional, non-prescribed) as a function of age. The conditional expectations are calculated using a Fan (1992) locally weighted regression smoother, which allows the data to determine the shape of the function, rather than imposing (for example) a linear or quadratic form. Public facilities were consistently used by 90 to 95 percent of those who died before age 55. At older ages, fewer individuals sought treatment at public and private medical facilities. The fraction seeking public care, for example, falls from 90 percent of those who died between the ages of 55 and 59, to 66 percent for those who died between 75 and 79.

Use of traditional healers reaches its highest rate among persons who died in their late twenties, of whom nearly 60 percent sought care from a traditional healer. Traditional care declines at older ages, falling from 50 percent among those aged 60 to 35 percent among those aged 65 and older. There is also a small downward trend in the use of non-prescribed treatment with age. Among those in their early twenties, 50 percent were reported to have such treatments, which declines to below 40 percent among those aged 60 and above. Overall, we find that among individuals in the demographic surveillance area who died between the ages of 20 and 60, upwards of 95 percent had seen a public doctor, 90 percent had seen a private doctor, and half had seen a traditional healer. A general pattern is that, at oldest ages, use of all types of medical

services declines.

Costs of treatment

We asked primary care-givers to discuss all costs of treatment (including, for example, transportation to and from health facilities, costs for medicines, and costs associated with hospitalization), and we report, in the last two columns of Table 2, medical-related spending for adults who died following an illness. Column 2 reports mean expenditure in South African Rands for the service listed in the row heading. Means in column 2 include zeros for those individuals who did not use a particular service. Column 3 reports average expenditures for only those who were reported to have used this health service. As a benchmark, median monthly income from all sources per household member was approximately R125 for Black South African households in KwaZulu-Natal in 2001.²

Spending on public doctors and clinics is non-trivial, averaging R210. That more than 1.5 times monthly income per capita was spent on public clinics and doctors primarily reflects the expenditure surrounding the clinic visit (e.g. transport to and from the clinic) rather than the visit itself, which is free of charge. Ninety percent of persons who presented at a public clinic also sought treatment with a private doctor, which is notable given the poverty in this region, and mean spending on public and private doctors combined averaged R531, or more than four times monthly income per person in the household. Spending on all types of care, in adult deaths following an illness, averaged R881, or seven months of per capita household income.

The age profile of spending, by type of service, is presented in the right panel of Figure 2. We find, not surprisingly, that spending on private doctors is uniformly more expensive than spending on public doctors and clinics. Overall, we find a pattern in which spending increases

slightly with age until late middle-age, after which spending on treatment declines significantly. Individuals who were aged 20 to 59 at death spent R964 on all treatments following an illness, while those aged 60 or above spent R612 on average. This is remarkable in part because most women aged 60 and above, and men aged 65 and above, are eligible for a generous state old age pension, which provides them with R740 per month. That less is spent on pensioners' medical care may reflect both the fact that pensioners live in poorer households on average, and that pension income tends to be treated similarly to other incomes coming into the household. (See Case and Deaton 1998 for discussion.) In addition, it may be that the elderly don't believe that medical attention will be helpful in curing what ails them.

Traditional healers

A variety of medical services are covered under the heading 'traditional healer.' We asked care-givers about three types.³ These are: *inyangas*, described in a Select Committee on Social Services 1998 report as "herbalist or traditional doctors. This is usually a person who uses herbal and other medicinal preparations for treating disease;" *sangomas*, described as "diviners. They are trained to communicate with and utilise the powers of ancestors in diagnosing a disease or mishap;" and an *umthandazi*, a faith or spiritual healer, who often uses holy water and prayer to treat the ill.

Care-givers' reports on the types of traditional healers chosen are presented in the left panel of Figure 3, and the costs of treatment, by type of healer, are presented in the right panel. Forty-two percent of adults aged 20 to 60 were reported to have seen an inyanga; 20 percent, an umthandazi; and 13 percent, a sangoma. Care-seeking declined for all types of traditional care

above age 60.

Conditional on visiting an inyanga, care-givers' reports of expenses ranged from 0 to R4000, with an average of R433. Those visiting a sangoma averaged R371, and those seeing an umthandazi averaged R219. In the next section, we will investigate the determinants of treatment type and spending, for traditional healers, public and private doctors, and non-prescribed treatments.

Determinants of health seeking behavior

We turn now to investigate whether and how economic status affects health seeking behavior among those who were ill prior to their deaths. Table 3 presents results, in each of its first four columns, from ordinary least squares regressions, in which an indicator of seeking care from each type of provider is regressed on the deceased's age at death, sex, educational attainment, the number of assets owned by the deceased's household, and an indicator that the deceased was working when he or she was healthy. In addition, we control for the length of time the person was ill prior to death, by adding indicator variables that the deceased was ill between 1 to 3 months, 3 to 6 months, 6 to 12 months or more than 12 months. The reference category is having been ill between 0 and 1 month prior to death. The coefficients presented in Table 3 represent the change in the probability of reporting each type of service provider, given a change in the variable listed in that row.⁴ The length of illness coefficients should be interpreted relative to the reference category so that, for example, for a person of the same age, sex, working status and SES background, the probability of seeking the care of a traditional healer is 21 percentage points higher among those who were ill for more than a year relative to an individual who was ill less

than a month before dying.

Overall, we find that age, education, asset ownership and length of illness are significantly predictors of health seeking behavior. Consistent with the picture presented in Figure 2, we find that older persons are significantly less likely to present at a public clinic, or to visit a traditional healer. With each year of age, individuals are three-tenths of a percentage point less likely to seek help at a public clinic or a traditional healer, on average. Women are significantly more likely to take non-prescribed medication, but otherwise we find no significant difference in health seeking between men and women.

Better educated people are significantly more likely to see a public doctor, a private doctor, and to take a non-prescribed self-medication. Each year of schooling is associated with an increase in the probability of seeing a public doctor of seven-tenths of one percentage point, and a private doctor of five-tenths of a percentage point. Asset ownership is significantly associated with presenting at a private doctor's office, and with reports of taking non-prescribed treatments. Each additional asset owned by the household is associated with a seven-tenths of a percentage point increase in the probability of seeing a private doctor.

The final column of Table 3 presents results for the total number of treatment types reported. These range from zero, for individuals who saw no doctors, healers and clinics, to four, for individuals who saw a private doctor, a public doctor, and a traditional healer and took non-prescribed treatments. We find that assets, education, and having held a job when healthy are all significant determinants of health seeking. People at older ages avail themselves of significantly fewer types of treatment.

For service providers taken separately, and for all treatments studied jointly, we find that

longer illnesses are associated with significantly higher probabilities of seeing a doctor or healer, or in taking non-prescribed treatments. Relative to individuals who are ill for less than a month, those who are ill between 1 to 3 months are 10 percentage points more likely to see a public doctor, 15 percentage points more likely to see a private doctor, and 16 percentage points more likely to take a non-prescribed treatment. For all treatment types, these numbers are larger, the longer the period of illness.

There are two credible, but quite different, interpretations of this pattern. It may be that those who live longer have time to seek additional care, and we are simply observing cumulative health seeking over a longer duration. A variant of this explanation is that individuals may turn to traditional healers if they believe Western medicine is failing them. This is consistent with the association between length of illness and the use of traditional medicine that we see in Table 3. Alternatively, individuals who seek additional care may live longer as a result of the treatment they received. We would need more precise information on the timing of treatment to make headway on this issue. We will return to this below.

Table 4 presents the determinants of spending on medical services, for those adults who were ill prior to death. The first four columns present results of OLS regressions of spending on public doctors, private doctors, healers, and non-prescribed treatments, regressed on the same set of control variables used in Table 3. The final column presents results for overall spending on health care, which is the sum of spending on all types of health services. We find, holding all else constant, an additional household asset is associated with R39 additional total spending on medical care. This spending is divided almost evenly between public doctors (R12), private doctors (R8), traditional healers (R7) and non-prescribed treatments (R9).

Each additional year of education is associated with an additional R23 in spending, which is also divided approximately evenly between public clinics and doctors, private doctors and traditional healers. Individuals who were working when healthy spend over R236 more for medical care, controlling for length of illness, age, education and asset holdings. This is largely spent on private doctors and traditional healers, and may reflect the fact that adults who had been working are more likely to be younger adults who died of AIDS.

We find no difference in spending on medical care by age, or between men and women. However, as was true of choosing to see a medical service provider, we find that significantly more money is spent on care when individuals have been ill for a longer period of time. Relative to those who die after being ill for less than a month, those who are ill for more than a year spend R638 more on medical care, which is split between public doctors (R172), private doctors (R196), traditional healers (R208) and non-prescribed treatments (R129).⁵ Again, one must take care not to over-interpret these results. Perhaps people who spend more live longer because the treatments are effective, or perhaps those who live longer have more time to spend money on health care. It is difficult to push this further without additional evidence.

That said, there are patterns of health seeking behavior by length of illness that are worthy of future study. Table 5 presents health seeking with public doctors and clinics, private doctors, traditional healers and non-prescribed treatments, by length of illness and educational attainment of the deceased. We divide adults who died after an illness into a low education group (six or fewer years of education), and a high education group (seven or more years of education), and we analyze their health seeking behavior by regressing their use of each type of health service on indicators for their length of illness, separately for low and high education types, while

controlling for age at death and sex. Among those who are ill for less than one month before dying, we find significant differences between the health seeking behavior of the low and high education groups: those with more education are significantly more likely to seek out treatment with public and private doctors. Age-adjusted, those who are better educated are 10 percentage points more likely to seek treatment from a public doctor or clinic, and 20 percentage points more likely to seek treatment from a private doctor. In contrast, those who are less well educated are 14 percentage points more likely to seek treatment from a traditional healer. The second to the last row of Table 5 presents *F*-statistics, showing that the coefficients presented between the low and high education groups are statistically significant for those who died after a very short illness (less than a month). These results are consistent with a model in which better educated people respond to illness initially by seeking out western medicine, and less well educated persons by seeking out traditional healers.

These differences between less and better educated persons disappear when we look at people who die after a long illness. Among those who are ill for more than a year, we find no significant difference in seeking medical service from a public doctor, a private doctor or a traditional healer, between those with more and less education. However, better educated persons are significantly more likely to use a non-prescribed treatment from a chemist shop.

The differences in health seeking between persons with less and more education can also be seen in their health spending. Among those who are ill for less than a month, better educated persons spend more on public doctors and clinics (R192 in contrast to R124), and slightly more on private doctors (R136 versus R128). Less well educated people spend twice as much on traditional healers on average (R260 versus R107), and more on non-prescribed treatments (R121

versus R80). Although none of these differences is significant at a 10 percent level, the patterns are nonetheless consistent with choices made on where to seek treatment.

Conclusions

In Northern KwaZulu-Natal, almost every individual who becomes ill and dies seeks treatment from a Western medical provider. Seeking treatment from either a public clinic or doctor, or a private doctor, places a strain on the budgets of households in this area. A rough rule of thumb is that, on average, treatment expenses associated with public doctors amount to nearly twice median per capita monthly income, and from a private doctor to almost three times per capita monthly income. An alternative way to think about the money spent on medical care is to compare it to spending on children's educations. The average cost of seeking treatment from a private doctor amounts to more than half a year's expenditure by the household for a child's education (approximately R600 annually). Households for whom resources are scarce, which describes most households in this area, face difficult decisions on how to allocate their budgets.

Individuals with greater economic resources are significantly more likely to seek treatment from private doctors, and spend significantly more for all types of health services. Individuals' educations are also important determinants of care sought, and spending on services. Better educated people respond to illness initially by seeking out western medicine, while less educated persons seek out traditional healers. If private doctors on average provide services and medications that are unavailable at public clinics, health seeking behavior may contribute to SES-health gradients observed in South Africa (Case 2004).

Use of traditional healers is high, with half of all adults who fall ill before death seeking

care from an inyanga, a sangoma or an umthandazi. Relative to Western medicine, the average price of treatment from a traditional healer is high (R466), amounting to more almost five times median per capita income.

Individuals who are ill for a longer period before death are reported to see a greater number of health providers. While almost everyone interacts with Western medicine, those who are ill longer also see traditional healers and take non-prescribed medications. This may have implications for the long-run management of chronic conditions and ART adherence.

Footnotes

1. Our data cover 73% of all members of the DSA who died in 2003. The majority of 2003 deaths that we do not cover occurred in the first quarter of the year. Verbal autopsy nurses would have already visited homesteads to inquire about these deaths prior to our data collection effort.
2. Calculated from the South African Census 2001, 10 percent sample, using Statistics South Africa's derived income variable, dropping households where individuals had missing income data.
3. Our descriptions of inyangas and sangomas and our reference to the Select Committee on Social Services document are drawn from Ashforth (2004), Chapter 2.
4. Results are very similar when estimated using other techniques, such as probits or logits.
5. These numbers do not add up precisely to the difference in total spending reported in last column because there are observations missing for some types of medical spending.

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ACDIS Illness and Death Study

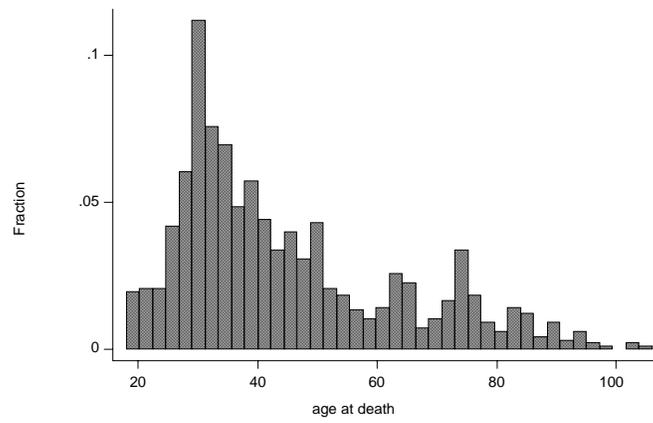


Figure 1. Age at Death

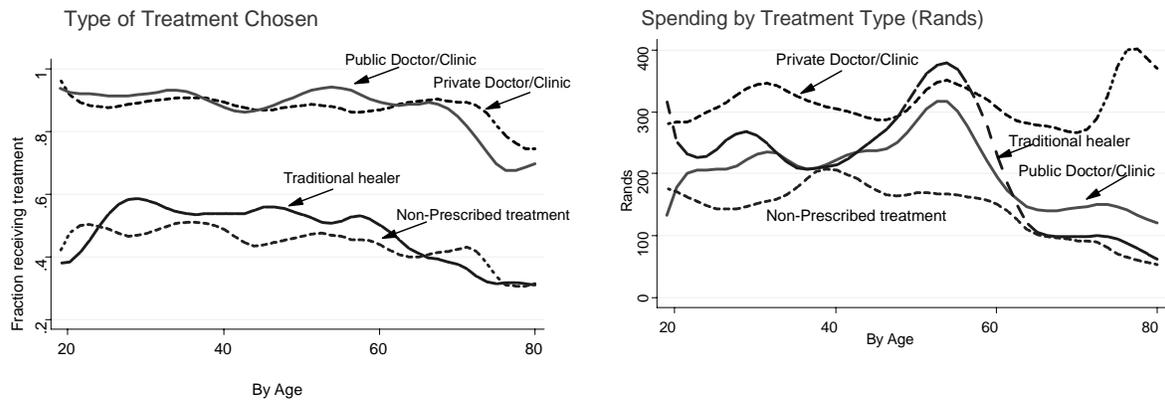


Figure 2. Treatment choice and expenditures

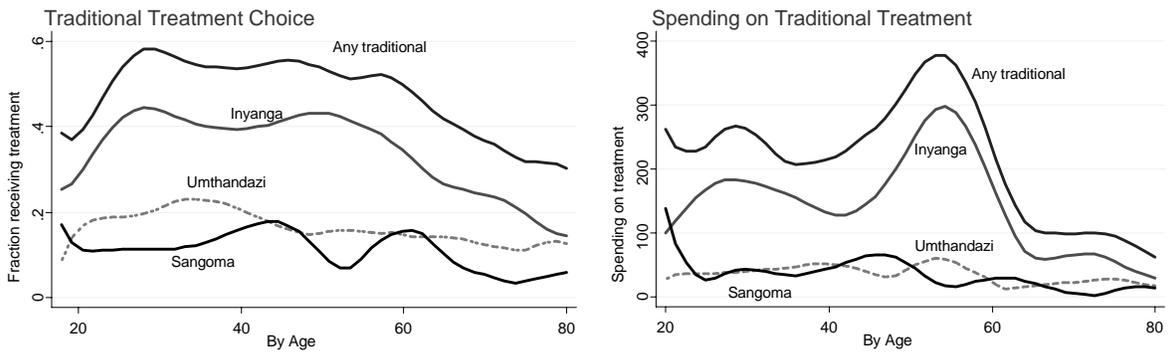


Figure 3. Selection and expenditure on traditional healers

Table 1. Characteristics of the Demographic Surveillance Area

	All members of the DSA at HSE1 (2001)	All Deaths in the DSA	Adult deaths in DSA following an illness
<i>Household and Individual Characteristics</i>			
Number of assets owned	7.81	7.37	7.44
Age at HSE1 (column 1)	23.31	37.24	44.81
Age at death (columns 2 and 3)			
Percent less than age 18	46.7	16.9	0
Percent Female	52.7	51.3	55.0
Years of completed education	5.32	5.61	5.73
<i>Prior to death, Percent of Deceased who were ill</i>			
Sudden death		9.8	
Less than one month		18.3	15.7
One to three months		16.8	17.3
Three to six months		14.2	17.0
Six to twelve months		22.6	28.0
More than twelve months		18.4	22.1
Number of observations	84,821	1282	975

Table 2. Health Seeking Behavior of Adults Who Were Ill Prior to Death

	Percentage who sought this service	Mean spending on this service in South African Rands	
	All	All	Conditional on reporting this type of service
Public doctor or clinic	87.8	210.0	243.7
Private doctor or clinic	88.0	316.8	362.4
Traditional healer	50.0	220.8	466.8
Non-prescribed treatment	45.6	149.4	342.9
Western doctor (public or private)	96.9	530.8	550.3
Western doctor <i>and</i> traditional healer	49.6	1094.2	1094.2
Any treatment	97.5	880.9	908.2
Number of observations	974	974	--

Notes to Table 2. Information on one death was not used in this analysis, because the respondent did not know whether the deceased had received treatment prior to death. Spending information is missing for some observations for some types of medical services reported in columns 2 and 3. Missing values occur when the respondent does not know or cannot remember what was spent for a particular health service. Conditional spending on Western doctor plus conditional spending on traditional healers doesn't sum precisely to conditional spending on both because of missing values.

Table 3. Socioeconomic Correlates of Health Seeking Behavior Prior to Death

	Choice of Treatment				Number of treatment types
	Public doctor or clinic	Private doctor or clinic	Traditional healer	Non-prescribed treatment	
Number of assets owned by household	.002 (.004)	.007 (.003)	-.002 (.005)	.016 (.005)	.022 (.010)
Years of completed education of the deceased	.007 (.003)	.005 (.003)	.002 (.005)	.008 (.005)	.023 (.010)
Indicator: deceased was working when healthy	-.013 (.026)	.041 (.026)	.118 (.040)	.062 (.039)	.208 (.075)
Age at death	-.003 (.001)	-.000 (.001)	-.003 (.001)	-.001 (.001)	-.006 (.002)
Female	.000 (.023)	.029 (.023)	.016 (.035)	.077 (.035)	.122 (.066)
Length of illness:					
1-3 months	.106 (.039)	.150 (.038)	.086 (.060)	.158 (.059)	.500 (.112)
3-6 months	.152 (.039)	.171 (.039)	.085 (.060)	.253 (.060)	.660 (.113)
6-12 months	.122 (.035)	.167 (.034)	.178 (.054)	.276 (.053)	.743 (.101)
more than 12 months	.216 (.037)	.206 (.036)	.205 (.057)	.258 (.056)	.884 (.106)

Notes to Table 3. Sample is restricted to adults aged 18 and older who were ill prior to death. Number of observations = 810. Results are based on ordinary least squares regressions. Coefficients in columns 1 to 4 are interpretable as the change in the probability of using each type of health service associated with a change in each of the right side variables presented. Standard errors are reported in parentheses. The reference (omitted) category for length of illness is illness of 0 to 1 month.

Table 4. Socioeconomic Correlates of Spending on Health Services Prior to Death

	Rands spent on treatment sought:				Total Spending
	Public doctor or clinic	Private doctor or clinic	Traditional healer	Non-prescribed treatment	
Number of assets owned by household	11.57 (.4.78)	8.43 (4.88)	7.28 (5.96)	9.14 (4.83)	38.52 (11.66)
Years of completed education of the deceased	8.82 (4.65)	8.10 (4.71)	8.32 (5.72)	0.51 (4.64)	22.74 (11.38)
Indicator: deceased was working when healthy	-20.23 (35.34)	81.80 (35.87)	99.65 (44.07)	36.97 (35.45)	236.05 (86.01)
Age at death	-0.23 (1.05)	0.76 (1.07)	-0.70 (1.30)	-1.47 (1.05)	-0.91 (2.58)
Female	12.81 (31.39)	40.65 (31.77)	4.81 (38.88)	40.90 (31.49)	113.04 (76.48)
Length of illness:					
1-3 months	9.63 (53.16)	133.48 (53.88)	12.68 (66.34)	117.74 (53.32)	264.36 (129.82)
3-6 months	77.18 (53.47)	135.21 (54.34)	148.26 (66.48)	98.88 (53.32)	435.28 (129.78)
6-12 months	80.72 (47.37)	102.18 (48.40)	94.06 (59.65)	95.37 (48.16)	359.24 (116.87)
more than 12 months	172.84 (49.22)	196.44 (50.71)	208.17 (62.25)	128.91 (50.56)	637.59 (120.97)
Number of observations	728	783	772	782	682

Notes to Table 4. Sample is restricted to adults aged 18 and older who were ill prior to death. OLS estimation, with standard errors reported in parentheses.

Table 5. Health Seeking By Education Class Prior to Death

Length of illness:	Dependent variable = 1 if treatment was sought with:							
	Public doctor or clinic		Private doctor or clinic		Traditional healer		Non-prescribed treatment	
	Low Education	High Education	Low Education	High Education	Low Education	High Education	Low Education	High Education
0 to 1 month	.818	.920	.643	.843	.594	.446	.260	.242
1 to 3 months	.939	1.02	.846	.930	.612	.645	.383	.427
3 to 6 months	1.04	1.01	.911	.901	.664	.644	.380	.689
6 to 12 months	.958	1.05	.909	.910	.742	.711	.487	.580
more than 12 months	1.07	1.08	.930	.964	.732	.802	.466	.594
<i>F</i> -test: coefficient for low education = high education for those ill less than 1 month (<i>p</i> -value)	2.92 (.0877)		12.04 (.0005)		2.68 (.1021)		0.04 (.8456)	
<i>F</i> -test: coefficient for low education = high education for those ill more than 1 year (<i>p</i> -value)	0.01 (.9327)		0.53 (.4667)		0.91 (.3393)		3.09 (.0791)	

Notes to Table 5. Sample is restricted to adults aged 18 and older who were ill prior to death. Coefficients reported are from OLS estimation. Included in all regressions are age at death, and sex of the deceased. The two columns presented for each treatment report coefficients from one regression, which includes indicators for low education interacted with indicators for length of illness prior to death and indicators for high education interacted with indicators for length of illness prior to death. Number of observations = 854.

Table 6. Health Spending By Education Class Prior to Death

Length of illness:	Dependent variable = Spending on treatment sought with:							
	Public doctor or clinic		Private doctor or clinic		Traditional healer		Non-prescribed treatment	
	Low Education	High Education	Low Education	High Education	Low Education	High Education	Low Education	High Education
0 to 1 month	123.7	191.5	127.6	135.5	259.6	107.2	120.7	80.3
1 to 3 months	151.1	179.4	150.6	386.5	221.7	222.1	270.4	180.6
3 to 6 months	197.2	271.2	206.1	380.2	237.5	515.6	160.3	265.5
6 to 12 months	244.4	235.9	241.8	266.4	302.5	325.1	187.7	228.2
more than 12 months	271.5	390.3	406.8	375.8	409.4	454.5	192.9	300.0
<i>F</i> -test: coefficient for low education = high education for those ill less than 1 month (<i>p</i> -value)	0.76 (.3834)		0.01 (.9346)		2.38 (.1230)		0.26 (.6096)	
<i>F</i> -test: coefficient for low education = high education for those ill more than 1 year (<i>p</i> -value)	3.59 (.0586)		0.16 (.6902)		0.33 (.5681)		2.78 (.0961)	
Number of observations	768		824		814		825	

Notes to Table 6. Sample is restricted to adults aged 18 and older who were ill prior to death. Coefficients reported are from OLS estimation. Included in all regressions are age at death, and sex of the deceased. The two columns presented for each treatment report coefficients from one regression, which includes indicators for low education interacted with indicators for length of illness prior to death and indicators for high education interacted with indicators for length of illness prior to death.