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Lack of health insurance in living kidney donors

Lisette H. Casagrande^a, Sarah Collins^b, Abigail T. Warren^b, and Elizabeth S. Ommen^a

^aDivision of Nephrology, Mount Sinai School of Medicine, New York, NY, USA

^bRecanati Miller Transplantation Institute, Mount Sinai Medical Center, New York, NY, USA

Abstract

Living donors are recommended to receive lifelong routine health maintenance after donation. There has been little examination of health insurance status among living donors, despite the fact that lack of health insurance is likely to impede donors' ability to obtain long-term healthcare post-donation. We performed a retrospective chart review for all living kidney donors at our institution between 2004 and 2008 to determine insurance status, demographic, socioeconomic, and basic health characteristics. Twenty-three percent of donors were uninsured at the time of donation. Odds of being uninsured were significantly lower in donors who were older than 40 yr of age or who had at least a college education, and significantly higher in donors who were non-white, non-English-speaking, or non-US citizens. Odds of being uninsured did not differ according to whether donors were obese, hypertensive, or smokers. On multivariate analysis, only non-white race, non-US citizenship, and education level less than a college degree were associated with lack of insurance. Lack of health insurance is more prevalent in living kidney donors than in the general US population. Its disproportionate impact on minorities, non-citizens, and the less well educated is greater than that in the general population.

Keywords

health insurance; kidney transplantation; living donor; racial disparities

Living kidney donors are essential to renal transplantation: they help to ease the growing gap between demand for and supply of donor kidneys, and they afford improved graft and patient survival to their recipients compared with recipients of deceased donor kidneys (1). Although overall health risks after kidney donation are felt to be small, donors are recommended to have routine health maintenance for the rest of their lives. Currently, there are 43 million non-elderly adults in the US without health insurance, and this number has grown in recent years (2). There has been little examination of health insurance status among living donors, despite the fact that lack of health insurance is likely to impede donors' ability to obtain long-term healthcare post-donation. We therefore performed a retrospective review of living kidney donors at an urban academic center to determine the prevalence of donors without health insurance and donor characteristics that may be associated with being uninsured.

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Corresponding author: Elizabeth S. Ommen, MD, Division of Nephrology, Mount Sinai School of Medicine, 1 Gustave L Levy Place, PO Box 1243, New York, NY 10029, USA. Tel.: 212 241 3549; fax: 212 987 0389; elizabeth.ommen@mssm.edu.

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Author contributions

Lisette Casagrande participated in research design, data collection, drafting the paper, and approving the paper. Elizabeth Ommen participated in research design, data analysis, drafting and revising the paper, and approving the paper.

Patients and methods

Transplant clinic social work charts were reviewed for all living kidney donors at Mount Sinai Medical Center between January 1, 2004, and December 31, 2008, for whom these charts were available. Data were collected on health insurance status as well as demographic, socioeconomic characteristics, and tobacco use. The clinical data of height, weight, and blood pressure were then obtained from the electronic medical record. Uninsured donors were defined as those with no health insurance at the time of donation, according to the social work chart. Categories of predictor variables were determined *a priori* according to the median, clinically meaningful cut-points (e.g., hypertensive vs. non-hypertensive), or other logical cut-points (e.g., English-speaking vs. non-English-speaking). Body mass index was calculated as (weight/(height in m)²). Obesity was defined as body mass index ≥ 30 , and hypertension was defined as a systolic blood pressure ≥ 140 and/or a diastolic blood pressure ≥ 90 according to the transplant clinic chart. This study received human subjects' approval.

Statistical analysis was performed using Stata 8.2 (StataCorp, College Station, TX, USA). The impact of donor characteristics on the likelihood of being uninsured was first determined by univariate logistic regression. The presence of effect modification was assessed for relevant variables using interaction terms. All characteristics found to be significantly associated with being uninsured were included in the final multivariate model, and the final model was tested for goodness of fit using the Hosmer–Lemeshow test. All tests were two tailed, and alpha was set at 0.05.

Results

Insurance status data were available for 366, or 90%, of living kidney donors during the period under study. Characteristics for these donors are described in Table 1. Sixty-seven percent of donors had commercial insurance, 10% had Medicare or Medicaid as their primary insurance, and 23% of donors were uninsured. Uninsured donors are compared to those with insurance in Table 2. Odds of being uninsured were significantly lower in donors who were older than 40 yr of age (OR = 0.5, 95% CI 0.3–0.9) or who had at least a college education (OR = 0.2, 95% CI 0.1–0.4), and significantly higher in donors who were non-white (OR = 3.5, 95% CI 2.0–6.3), non-English-speaking (OR = 4.7, 95% CI 2.5–8.7), or non-US citizens (OR = 7.3, 95% CI 4.2–12.6). Odds of being uninsured did not differ according to whether donors were smokers, obese, or hypertensive. On multivariate analysis, only non-white race, non-US citizenship, and education level less than a college degree were significantly associated with lack of insurance, as shown in Table 3.

Discussion

We found that 23% of living donors at an urban academic medical center were uninsured at the time of donation. This is higher than the national average during the time period under study, when the prevalence of uninsured adults under age 65 ranged from 19% to 20% (2). In an examination of a nationally representative sample of hospital stays in 2003, 17% of living donors were uninsured; the study authors stated that their analysis approach most likely leads to an underestimate of the proportion of donors without insurance (3). A more recent analysis of the United Network for Organ Sharing/Organ Procurement and Transplantation Network (UNOS/OPTN) database found that 18% of all US donors lacked health insurance at the time of donation, with an additional 33% excluded from the analysis because health insurance status was unknown (4). Our study, which demonstrated a higher rate of absence of insurance, suggests that missing data in the UNOS/OPTN donor registry may underestimate the rate of lack of insurance among donors nationwide.

Being non-white, not a US citizen, and with an education level less than a college degree were independent risk factors for lack of insurance. This is similar to trends nationwide, but the discrepancies are more striking in this donor population. For instance, 10% of white people, 16% of black people, and 31% of Hispanics were uninsured nationwide during the time under study (2), compared with 11% of white people, 28% of black people, and 36% of Hispanics among our donors. And while non-US citizens are three times more likely to be uninsured in national estimates, noncitizen donors in our study were seven times more likely to be uninsured (5).

Health insurance coverage is essential in living donors, because it determines access to healthcare. According to an analysis of the National Health Interview Survey, 32% of uninsured adults have postponed seeking needed medical care because of cost and 26% have gone without needed medical care because of cost (5). The uninsured are also significantly less likely to receive routine preventative care, including among individuals with chronic health problems (6). This is particularly concerning given our finding that donors who were hypertensive, obese, or smokers had a similar rate of being uninsured than donors without these underlying health risks. In one national survey, the adjusted proportion of obese individuals who did not have a routine checkup in the past two yr was 41% in the uninsured compared with 14% in the insured, while the proportion of hypertensive individuals with no checkup was 25% in the uninsured compared with 10% in the insured (6).

Meta-analyses have shown that living kidney donors have higher blood pressure and more proteinuria than non-donors (7, 8). A number of studies have found that living kidney donation does not increase important long-term medical risks, but the methodology of these studies limits the strength of their findings (9). Importantly, donors in these studies have been almost exclusively white (10, 11). Recent database analyses have shown that black donors have higher rates of end-stage renal disease than white donors (12) and that black and Hispanic donors have higher rates of hypertension, diabetes, and chronic kidney disease than non-Hispanic white donors (13). Although there is no evidence that donation itself increases these risks, it is troubling that the group of donors most likely to experience future medical problems are the least likely to have access to appropriate medical care. There is also limited data on long-term outcomes in donors with underlying medical problems, despite growing numbers of donors accepted with these problems (14, 15). Yet in our donor population, donors with underlying health risks had a similarly high prevalence of being uninsured as donors without these health risks.

Lack of health insurance among potential living donors may limit growth in living donor transplantation. A small number of transplant centers require that living donor candidates have health insurance to be eligible for donation, and there is some evidence that potential donors have not gone on to donate because of fears of future insurance problems (16). Non-white people comprise a disproportionately large percentage of candidates on the kidney transplant waiting list and a disproportionately small percentage of living donors (1); it is possible that the differential rates of health insurance coverage between white people and non-white people could be a contributing factor in this discrepancy.

A limitation of this study is that we do not know whether donors without health insurance at the time of donation were motivated to obtain health insurance after donation. However, most Americans without insurance coverage are uninsured because of the cost of insurance, and most of those uninsured at any point in time remain uninsured for years (4). This study's generalizability is limited by its being a single-center study at an urban academic center. Despite this limitation, our center has a busy living donor transplantation program and has health insurance data on a far greater proportion of donors than does the UNOS donor registry, and we believe that this study offers valuable information.

The absence of health insurance was more prevalent at this urban academic center than in the general US population, and disparities according to race, citizenship, and educational level attained were more pronounced. Health insurance is vital to ensure that all living donors have appropriate long-term medical care; this is particularly true in non-white donors, who face greater long-term health risks in general and have been less well studied. Although the Affordable Care Act may increase the number of Americans with insurance, its future and in particular the future of the individual mandate are far from certain. We have previously argued that provision of lifelong health insurance to living donors is necessary to promote growth in the system of living donor transplantation (17). We believe our current data underscore the need to re-examine this issue, to ensure that all donors are able to receive the long-term healthcare they deserve.

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Table 1

Description of baseline characteristics of living kidney donors, 2004–2008

Donor characteristic	
<i>Health insurance</i>	
Commercial	246 (67)
Governmental	37 (10)
None	83 (23)
<i>Gender</i>	
Male	155 (42)
Female	211 (58)
<i>Age</i>	40 (18–72)
<i>Race/ethnicity</i>	
White	152 (42)
Black	82 (22)
Hispanic	100 (27)
Asian	17 (5)
Other	14 (4)
<i>Primary language</i>	
English	277 (76)
Spanish	77 (21)
Other	12 (3)
<i>Citizenship</i>	
US citizen	284 (80)
Resident alien/visa	54 (15)
Undocumented	17 (5)
<i>Highest education level</i>	
Less than HS	42 (12)
HS/GED	111 (31)
Some college	79 (22)
College degree	81 (23)
Graduate school	47 (13)
<i>Tobacco use</i>	
Never	250 (70)
Former	44 (12)
Current	62 (18)
<i>Body mass index</i>	26 (18–41)
<i>Systolic blood pressure</i>	122 ± 12
<i>Diastolic blood pressure</i>	77 ± 9

Data are presented as n (%), median (range), or mean ± SD.

HS, high school; GED, high school degree equivalent.

Table 2

Associations of baseline donor characteristics with lack of insurance

Category	Prevalence uninsured	OR (95% CI) ^a	p-Value
<i>Age</i>			
<40	28.4	Ref	
40	16.9	0.5 (0.3–0.9)	0.009
<i>Gender</i>			
Male	24.5	Ref	
Female	21.3	0.8 (0.5–1.4)	0.472
<i>Race/ethnicity</i>			
White	11.2	Ref	
Non-white	30.8	3.5 (2.0–6.3)	<0.001
<i>Speaks English</i>			
Yes	18.1	Ref	
No	51.0	4.7 (2.5–8.7)	<0.001
<i>US citizen</i>			
Yes	13.7	Ref	
No	53.7	7.3 (4.2–12.6)	<0.001
<i>Education^b</i>			
<HS/GED	38.1	Ref	
HS/GED	29.0	0.7 (0.3–1.3)	0.246
College+	8.6	0.2 (0.1–0.4)	<0.001
<i>Current smoker</i>			
No	22.7	Ref	
Yes	22.6	1.0 (0.5–1.9)	0.984
<i>Obese</i>			
No	22.9	Ref	
Yes	22.1	1.0 (0.5–1.7)	0.882
<i>Hypertensive</i>			
No	23.4	Ref	
Yes	19.0	0.8 (0.4–1.6)	0.463

^aOdds ratio (95% confidence interval) compared with reference group.^bEducation levels are less than high school or equivalent, high school or equivalent ± some college, college degree or beyond.

Table 3

Results of multivariate analysis for donor characteristics associated with lack of insurance

	OR (95% CI)^a	p-Value
<i>Race/ethnicity</i>		
White	Ref	
Non-white	2.2 (1.1–4.1)	0.017
<i>US citizen</i>		
Yes	Ref	
No	5.2 (2.9–9.4)	<0.001
<i>Education^b</i>		
<HS/GED	Ref	
HS/GED	1.0 (0.5–2.2)	0.961
College+	0.3 (0.1–0.7)	0.007

^aOdds ratio (95% confidence interval) compared with reference group.

^bEducation levels are less than high school or equivalent, high school or equivalent ± some college, college degree or beyond.