The Epidemiology of End-State Renal Disease: The Six-Year South-Central Los Angeles Experience, 1980–85

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Abstract: Using the End-Stage Renal Disease Medical Information System and 1980 census information, the crude cumulative incidence among Blacks, Hispanics, and Whites in south central Los Angeles was determined to be 160.1, 49.28, and 55.3 per 100,000 respectively. Sex-specific rates were slightly greater in males. Among Blacks, nephrosclerosis and diabetes represented 41.5 and 30.2 per cent of the cases respectively and increased during the period 1980–85. (*Am J Public Health* 1987; 77:864–865.)

Introduction

Since 1973 and initiation of federal funding for the treatment of end-stage renal disease (ESRD), ESRD rates of referral for treatment have increased dramatically. As early as 1977, evidence was accumulating that ESRD developed with greater frequency in Blacks than Whites.[1] Further support for this hypothesis has been provided by several other studies.[2–5] For the most part this increased incidence among Blacks has been attributed to the greater prevalence of primary hypertension among this population. Both Rostand, *et al*,[4] and Sugimoto and Rosansky[5] found Blacks to have a 17-fold greater risk of developing hypertensive renal disease. Furthermore, the latter authors in examining data from 20 contiguous eastern states for the period 1973–79 found the referral rates among Whites to have stabilized while that among Blacks continued to increase for unknown reasons.

In the present study, we examine ESRD referral rates in South-Central Los Angeles, California with special reference to Blacks for the period 1980–85.

Methods

The geographic area was established by defining all those areas in which the populations were greater than 84 per cent Black; this included the areas known as Watts, Inglewood, and Compton. The contiguous areas were then included so as to obtain a more representative sample with respect to socioeconomic status. Population data were taken from summary tape file 3B (STF 3B) of the 1980 census. Within this area the population was comprised of 471,441 Blacks, 218,676 Whites, and 269,863 Hispanics; 228,693 of Hispanics were Mexican-Americans. All other racial groups (Asians, American-Indians, etc.) were excluded from analysis. Incident case data were abstracted from the Network Co-ordinating Council #4 registry of dialyzed patients. Within the registry, Hispanics were defined as all those individuals identified as White and of Spanish or Latin American descent. Since 1981, the ESRD networks have been given the "responsibility of ensuring the collection, submission and validation of all national ESRD medical information systems (MIS) patient-specific forms in dialysis and transplant patients" (Network Coordinating Council #4, 1985 Annual Report).

Results

Blacks had a six-year unadjusted cumulative incidence rate of 160.1 per 100,000, Hispanics 49.28, and Whites 55.3. The annual incidence rate for Blacks was 22.1 per 100,000 in 1980, decreased slightly in 1981, and rose steadily to 36.1 per 100,000 in 1985 (Figure 1). Among Whites, the rate decreased from 13.3 per 100,000 in 1980 to 6.4 per 100,000 through 1984 and then increased slightly in 1985. The trend among Hispanics has demonstrated a greater variability but generally increased, during this study period.

Among Blacks, there was no consistent variation in the annual sex-specific incidence rate. (Figure 2). For all ages greater than 15 years, the age-specific rates increased during the period 1980–85 (Table 1).

Among Blacks, hypertensive renal disease (nephrosclerosis) and diabetic nephropathy represented 41.5 and 30.2 per cent of the cases, respectively, glomerulonephritis 11.9 per cent, collagen vascular disease 3.4 per cent, and all other diagnoses 13 per cent. Hypertensive renal disease and diabetic nephritis incidence rates rose during the six-year time period but other disease incidence rates were stable (Table 2). While nephrosclerotic disease rates have demonstrated the

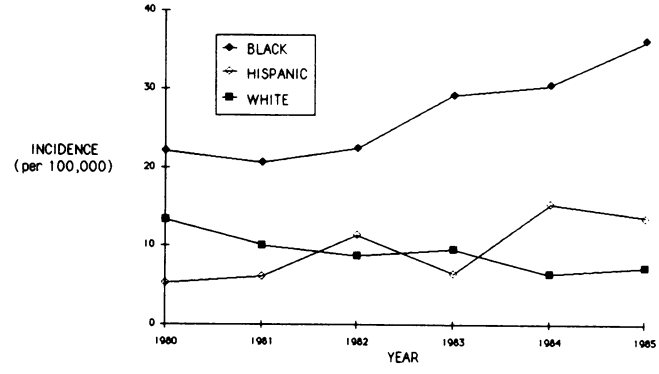

FIGURE 1—Race-Specific Incidence of ESRD in South-Central Los Angeles, 1980–85

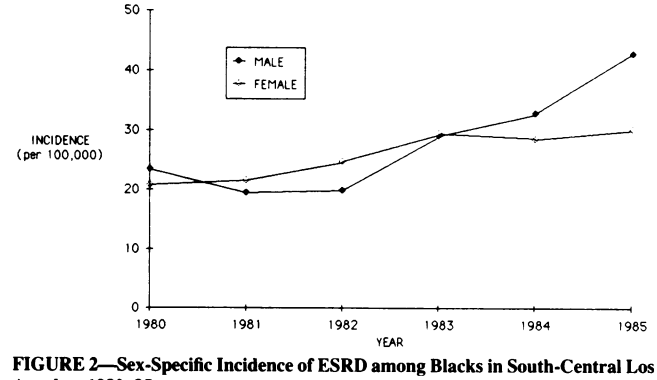

FIGURE 2—Sex-Specific Incidence of ESRD among Blacks in South-Central Los Angeles, 1980–85

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TABLE 1—Annual Age-Specific Rates (per 100,000) of ESRD among Blacks

Age (years)	1980	1981	1982	1983	1984	1985
15–59	25.7	16.7	19.8	25.7	31	31.7
60–64	80.3	92.7	61.8	111.2	105.0	172
65+	55.4	99.2	113.7	140	105	148.7

highest cumulative incidence relative to others. Blacks also had relatively higher incidences of diabetic, glomerulonephritis, and polycystic kidney diseases (Table 3).

Discussion

The increased incidence of ESRD among Blacks and Hispanics must be interpreted cautiously. Misclassification by race or ethnicity may exist, although we believe any misclassification to be small. The effect of including only White Hispanics in the case data would be to underestimate the rate among Hispanics. Non-White Hispanics would then be classified as Black and thus tend to overestimate the rate among Blacks. As a measure of the rate among Mexican-Americans, that of Hispanics may underestimate that of Mexican Americans, since as many as 15 per cent of Hispanics are non Mexican Americans. The use of retrospective data identifies only those individuals who have achieved entry into the system. Consequently, referral rates as a measure of incidence may underestimate the true incidence. Given the nature of federal funding for treatment and assuming that there is no excess of undetected mortality due to ESRD then the rates of referral provide a proxy measure of incidence.

Increasing access and use of available services must account for an unknown proportion of the trend in Blacks and Hispanics. Our sex-specific rates show a slightly higher incidence in males than females. However, it is interesting to reflect on the sex-specific trends. Based on national registry data for 1970, women comprised 32 per cent of the dialysis population. By 1976, they comprised 44.1 per cent of the total.[6] In this study we have found females to comprise 51.6 per cent of the population.

TABLE 2—Rates of Referral among Blacks (per 100,000) by Etiologic Categories and Year

Diagnostic Category	1980	1981	1982	1983	1984	1985
Nephrosclerosis	9.1	7.8	8.7	12.5	12.3	16.3
Diabetic Nephritis	4.9	5.7	7	9.5	9.3	12.1
Glomeruloneophritis	4	2.7	1.9	3	3.4	4
Collagen Vascular Disease	0.21	1.5	1.3	0.64	1.3	0.64
Polycystic Kidney Disease	—	0.42	0.64	0.42	—	0.64

TABLE 3—Rates of Referral (per 100,000) by Race and Diagnostic Categories 1980–85

Diagnostic Category	Blacks	All others	Risk Ratio	95% Confidence Intervals
Nephrosclerosis	66.82	15.15	4.4	3.42, 5.7
Diabetic Nephropathy	48.6	18.6	2.6	2.04, 3.32
Glomerulonephritis	19.1	5.73	3.3	2.23, 4.89
Polycystic Diseases	2.12	1.02	2.1	0.72, 6.15
Other Diagnoses	18.9	17.2	1.09	0.81, 1.47

(confidence intervals were estimated at the 0.05 alpha level).

Several authors have found glomerulonephritis to be the leading cause of ESRD, as supported by national data.[6] However, among Blacks, hypertensive renal disease tends to be the most significant underlying cause of ESRD. Rostand, *et al*, has estimated that 29 per cent of the ESRD among Blacks may be due to hypertension. Our data suggest that as much as 42 per cent may be due to primary hypertension. While it is certainly possible that some cases of nephrosclerosis may arise from other causes, we have found 92 per cent of cases diagnosed with nephrosclerosis to have reported a prior history of hypertension (data available on request to author).

We conclude that early detection and effective treatment of hypertension and diabetes among Blacks may reduce the incidence of ESRD and lead to some cost control with respect to the growing ESRD budget.

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