Patterns of Prescription and Nonprescription Drug Use in a Southern Rural Area

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THE RAPID ESCALATION OF DRUG COSTS in federally funded programs has caused government agencies to renew their interest in promoting proper drug usage. In 1974, the total expenditure for prescription drugs by the Department of Health, Education, and Welfare and other Federal agencies was about $2 million, or 15 percent higher than the expenditure for 1973 (*1*). To curb costs, agencies are contemplating the use of one or more cost-containment procedures, such as generic substitution, co-payments, and drug formularies. Additionally, questions are being raised about the proper use of drug benefits.

Before an effective cost-containment procedure can be implemented, however, the basic question "Who needs drugs?" must be answered. A step toward answering this question is to identify who uses or does not use drugs. This information and other data on rational prescribing behavior could contribute to improved prescribing among physicians. The answer is not readily available in the literature. Reports of studies on drug usage began to appear only as recently as 1960. Rabin (*2*), in a thorough review of drug usage, described most of the studies performed before 1969. After contrasting and comparing these studies, he concluded that some consistencies in the characteristics of people are linked to drug use. Females, higher education and social status, low and high incomes, older age, and greater morbidity tend to be associated with the use of prescribed and nonprescribed drugs. Moreover, Rabin concluded that the rates of prescribed drug use vary considerably among different populations.

Race is a variable that seems to be significantly associated with drug usage. Rabin and Bush (*3*), in a study performed in Baltimore, reported that nonwhites were less likely (25 percent) to use prescribed medicines than whites (35 percent) as well as nonprescribed medicines (29 percent and 36 percent, respectively). These authors also observed that race had an effect on prescribed-medicine use that is independent of social or economic class (*4*).

Because of the variability in drug usage noted by Rabin and Bush between whites and nonwhites and because few of the U.S. drug studies have been in rural areas, we conducted a study to verify and further delineate drug use patterns of rural blacks and whites. The study location was Rougemont/Bahama, N.C., predominantly a small-farm rural area with a population of 2,275 persons or 704 households.

Study Methods

A cross-sectional study of the rural Rougemont/Bahama households was conducted between September

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1973 and February 1974; interviews with 665 households (2,148 persons) were completed. Thereafter, a panel study of 611 households (confined to middle- and low-income households only—because of circumstances of funding, 53 families with incomes of $16,000 or more were excluded) was conducted over a period of 1 year, June 1974 to June 1975.

The data for analysis of drug use were collected from the Rougemont/Bahama North Carolina Panel Study performed in 1974–75 to examine this community's health behavior regarding demographic characteristics of the population, reported illnesses, barriers to and inequalities of access to medical care, and the population's use of services. The major objectives of the panel study were to monitor use of services, type and purpose of visit, usual source of care, use of medications, cost of services, use of multiple sources of care, and hospitalization over a 1-year period in a rural area. Details of the survey design have been published (*5*).

Each of six part-time interviewers was assigned a group of households to visit four times at 3-month intervals during the year. Information on family members was obtained primarily from the female head of the household, which may have resulted in some underreporting of minor illnesses of other family members. The numbers of successfully completed interviews and nonresponses for each interviewing period were as follows:

Visit 1, June–August 1974		*Visit 3, November 1974–March 1975*	
Interviews completed	571	Interviews completed	552
Nonresponse	40	Nonresponse	12
Refusal	7	Refusal	7
Moved	25	Moved	1
Miscellaneous	8	Death	1
		Miscellaneous	3
Visit 2, August–November 1974		*Visit 4, March–June 1975*	
Interviews completed	566	Interviews completed	547
Nonresponse	8	Nonresponse	5
Refusal	5	Refusal	1
Moved	1	Moved	3
Miscellaneous	2	Death	1

The interviewers had been trained to carry out the structured interviews. Questions on use of medicines by each household member were asked at each of the four panel visits for 10 categories: tranquilizers; analgesics; vitamins; medicines for coughs and cold, digestive disorders, skin and muscular conditions, hypertension, and allergies; contraceptives; and others. Responses were coded as "no drug taken," "nonprescription drug," and "prescription drug." Prescription drugs were then coded as "prescribed for the same person," "prescribed but don't know for whom." The question was worded "Which member of the family used or took any_____ since last _____ (one week ago)?" The proportion of persons taking medications at least once was derived from examining responses at each week of the four 1-week periods. Information on demographic characteristics, use of medical services, and quarterly family expenditures for drugs was also elicited from the respondents.

Data were analyzed for blacks and whites by drug category and whether the drug was prescribed or nonprescribed, and use of prescribed drugs was cross-tabulated by selected demographic characteristics. The chi-square test was used to identify significant differences between drug use and sociodemographic characteristics. The Grizzle Starmer Koch (GSK) method for analysis of multiple contingency tables was used to evaluate selected categories of prescription drugs (*6*). The effects of several demographic variables on drug-taking behavior were assessed simultaneously with an investigation of possible interactive effects. The test statistics are chi-squares, with significance reported at the 0.05 level.

Results

Selected characteristics of the Rougemont/Bahama population are shown by race in table 1. Although no significant differences were seen in the distribution of males and females between the two races, the white population was older than the black. The whites were also more educated and had higher incomes than the blacks. More whites than blacks perceived themselves to be healthy. Fewer whites than blacks were members of families having four or more members.

The proportion of people who used medicines at least once during four 1-week periods was as follows:

Category	*White (N=1,179)*	*Black (N=759)*
Nonprescription drugs	71.5	69.8
Prescription drugs[1]	56.2	30.8

[1] Significant at 0.05 level.

As shown in table 2, the proportions of blacks and whites using selected categories of nonprescription drugs were similar. Analgesics were most likely to be used, followed by medicines for coughs and colds and digestives disorders, vitamins, and medicines for skin and muscular conditions. However, blacks were

significantly less likely to use prescription drugs than whites and, for most of the drugs, used less than half as much as whites (table 3).

In table 4 the proportion of the population taking prescription drugs is examined for whites and blacks by selected demographic characteristics. The striking feature of this table is that within every category examined whites consumed more prescribed medication than blacks.

Members of large families used fewer drugs than members of small families. Use of prescription drugs was highest among females, the elderly, the less educated, the low income, and the less healthy subgroups. Because of the possible interactions between these variables, GSK analyses for three prescription drug categories—analgesics, hypotensives, and tranquilizers—were used to investigate the combined effects of several variables. A comparison of the proportions of users in each age, sex, and race group confirmed the individual significance of each of these variables and further showed that elderly white females were consistently higher users of the three drugs. In a second analysis, education was found to be significant in addition to age and sex—white females with low education were the highest users. A third analysis using age, race, and income again resulted in income being a significant variable, even when age and sex were controlled, and with low-income white females being the highest users.

As shown in the following table, the annual drug expenditure (out-of-pocket costs only) for white families in Rougemont/Bahama was almost twice that of black families.

	Whites		*Blacks*	
Family size	*Number*	*Expenditure*	*Number*	*Expenditure*
3 or less members	305	$86.73	102	$38.61
4 or more members	46	83.86	56	49.93

The average expenditure per person was $39 for whites and $13 for blacks; the national average is $45 per capita (*1*).

In response to questions on using prescription drugs prescribed for someone else, 10 whites and 1 black reported that they were doing so.

Discussion

The observed difference in use of prescription drugs can be attributed to illness behavior—72 percent of the blacks reported some illness during the year, in contrast to 95 percent of the whites (*7*). Similarly, 41 percent of the blacks and 68 percent of the whites saw a physician. Thus, the blacks saw physicians less and used less prescription drugs than whites. Nationally, drugs were prescribed for half of all ambulatory patients during visits for medical care (*8*). The

Table 1. Selected population characteristics of Rougemont/Bahama, by race, 1974–75

Characteristics	*White*		*Black*	
	Number	*Percent*	*Number*	*Percent*
Sex, all persons ...	1,179	60.8	759	39.2
Male	565	47.9	361	47.6
Female	614	52.1	398	52.4
Age group (years), all persons:				
0–16	332	28.3	323	43.2
17–44	418	35.6	238	31.9
45 or over	423	36.1	186	24.9
Education (years), head of household:				
0– 6	50	13.1	38	22.0
7–12	171	44.6	76	43.9
13 or more	162	42.3	59	34.1
Income, household:				
Less than $4,000 ..	91	27.7	64	43.5
$4,000–$7,999	102	31.0	54	36.7
$8,000–$11,999 ...	77	23.4	19	12.9
$12,000 or more ..	59	17.9	10	6.8
Perceived health status:				
Excellent	325	29.4	77	10.9
Good	519	46.9	485	68.7
Fair	178	16.1	118	16.7
Poor	85	7.7	26	3.7
Family size:				
3 or less members	848	73.7	303	39.9
4 or more members	331	28.1	456	60.1

Table 2. Proportion of population who used nonprescription drugs at least once during four 1-week periods, 1974–75, by race

Drug category	*White*		*Black*	
	Number	*Percent*	*Number*	*Percent*
Analgesics	633	53.7	392	51.6
Coughs or colds	254	21.5	191	25.2
Digestive disorders ..	221	18.7	146	19.2
Skin or muscular conditions	161	13.7	113	14.9
Vitamins	216	18.3	152	20.0
Other	66	5.6	28	3.7

Table 3. Proportion of population who used prescription drugs at least once during four 1-week periods, 1974–75, by race

Drug category [1]	White		Black	
	Number	Percent	Number	Percent
Analgesics	216	18.3	70	9.2
Coughs or colds	107	9.1	28	3.7
Digestive disorders	101	8.6	26	3.4
Skin or muscular conditions	80	6.8	25	3.3
Hypertension	176	14.9	78	10.3
Vitamins	170	14.4	38	5.0
Tranquilizers	178	15.1	36	4.7
Contraceptives	62	5.3	30	4.0
Other	335	28.4	94	12.4

[1] All but contraceptives were significant at the 0.05 level.

Table 4. Proportion of population who took prescribed drugs at least once during four 1-week periods, 1974–75, by selected population characteristics and race

Demographic characteristics	White		Black	
	Number	Percent	Number	Percent
Sex:				
Male	264	46.7	82	22.7
Female	397	64.7	151	37.9
Age group (years), all persons:				
0–16	121	37.6	41	12.7
17–44	216	51.7	79	33.2
45 or over	321	77.7	106	57.0
Education (years), head of household:				
0– 6	78	75.7	44	47.8
7–12	228	63.3	95	51.4
13 or more	196	58.0	45	32.8
Income, household:				
Less than $4,000	147	75.8	89	41.6
$4,000–$7,999	195	56.4	66	21.8
$8,000–$11,999	113	45.9	29	27.9
$12,000 or more	104	53.3	13	34.2
Perceived health status:				
Excellent	142	43.7	24	31.2
Good	267	51.4	112	23.1
Fair	142	79.8	67	56.8
Poor	76	89.4	20	76.9
Family size:				
3 or less members	541	63.8	131	43.6
4 or more members	120	36.3	101	22.1

high use of prescription drugs among whites in Rougemont/Bahama was partially due to the higher percentage of elderly whites than elderly blacks in the sample.

The use of prescription drugs by blacks in the Rougemont/Bahama sample was slightly higher than that reported by Bush and Rabin from a study in Baltimore (*9*). They found that 25 percent of the nonwhites used prescribed medicines, whereas we found that 31 percent of the blacks did so. However, there were significant differences in the use of prescribed drugs between whites in our sample and those in Baltimore; 56 percent of the Rougemont/Bahama whites had taken at least one prescription drug during four 1-week periods, and 35 percent of the Baltimore whites had consumed at least one in a 48-hour period. Significant differences were also seen in nonprescription drug usage between the two populations—72 percent of the whites and 70 percent of the blacks in our study had taken at least one, whereas 29 percent of the nonwhites and 36 percent of the whites in the Baltimore study used nonprescription drugs.

The higher usage of nonprescription drugs by both blacks and whites in our sample than those in Baltimore may possibly be attributed to several factors: (*a*) significant differences in demographic characteristics between the two populations, (*b*) the Rougemont/Bahama population used fewer medical services than the national average (*5*), and (*c*) most importantly, Bush and Rabin surveyed only the previous 48 hours whereas we used four 1-week recall periods.

The use of nonprescription drugs in Rougemont/Bahama corresponds with the pattern reported by Jefferys and associates from a study in a working-class housing estate in England (*10*), where two of three persons had taken a nonprescription drug during the previous 4 weeks. Knapp and Knapp (*11*) have suggested that the high use of nonprescription drugs may indicate that the first line of defense in illness is self-medication with nonprescription drugs. However, the benefits from this kind of behavior must be evaluated.

Although the drug expenditures for the Rougemont/Bahama sample are lower than the national average, their drug consumption—especially of nonprescription drugs—was higher than that reported by Bush and Rabin (*9*). The income levels and age composition may possibly explain this phenomenon —many of the black families as well as the elderly white residents are eligible for prescription coverage under Medicaid, whereas nonprescription drugs usually are not covered in this program. Therefore, the expenditures reported could conceivably be more for nonprescription than for prescription drugs.

Finally, we realize of course that prescription usage is likely to be most highly correlated with morbidity and physician visits, and we are presently exploring these aspects in greater detail.

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SYNOPSIS

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Data for analysis of drug use patterns of blacks and whites in a rural area were obtained from the Rougemont/Bahama North Carolina Panel Study performed in 1974–75. A major objective of the panel study was to monitor the use of health services, type and purpose of medical visit, usual source of medical care, medications used, cost of services, multiple sources of care, and hospitalization.

Household interviews included questions on the use of prescription and nonprescription drugs during four 1-week periods in 1974–75 by each household member. The questions were focused on 10 drug categories: analgesics, medicines for coughs and colds, digestive disorders, skin and muscular conditions, hypertension, and allergies, vitamins, tranquilizers, contraceptives, and other. Information was also obtained on quarterly family expenditures for drugs. The data were analyzed for blacks and whites separately by category and type of drug (prescribed or nonprescribed) and cross-tabulated by selected demographic characteristics.

The results indicated that blacks in Rougemont/Bahama used fewer prescription drugs than whites. This difference was attributed to the low use of medical care services by the black population. There was no significant difference between the races in the use of nonprescription drugs; however, use of these drugs was greater than reported in other studies—possibly because of the unavailability of or lack of information on, or both, health care services for these rural residents. The predominant users of three types of prescription drugs—analgesics, hypotensives, and tranquilizers—were older, less educated, and low-income white women. The annual drug expenditure for white families was almost twice that of black families.