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HEALTH PROBLEMS AND HEALTH CARE AMONG ADULT RESIDENTS OF NORTH CAROLINA'S HEALTH SERVICE AREAS

Known as the North Carolina Citizen Survey (NCCS), a sample survey conducted by the North Carolina Department of Administration during September and October of 1976 provides data related to the health and economic characteristics of the state's household population (1-4). Details concerning the survey design and methodology have been reported (1). Briefly, a stratified random sample with proportional allocation was selected from 1975 state income tax returns and 1975 listings of residents eligible for Medicaid assistance. A representative cross-section of adults was then questioned by telephone or in-person interview. Altogether, the sampling frame included approximately 96 percent of the household count estimated for 1973, and the final sample involved 1,385 households, each with a single respondent.

The representativeness of the statewide sample is discussed elsewhere (1). Generally, differences between estimates obtained in the survey and other independent estimates were not large although the possibility of some bias towards over-representation of urban households and lower-income households should be considered. Also, the survey appears to underrepresent adult males by about 3.5 percent.

This report purports to highlight survey results with respect to questions concerning the health and health care of households and adults in each of North Carolina's six Health Service Areas (HSA's). These data were tabulated by the Division of State Budget and Management in the Department of Administration. Other summary data generated by Budget and Management and reported elsewhere (3,4) are also discussed.

Except where the number of respondents (N) is given in the tables, results are based on approximately 1,380 responses distributed according to the following HSA totals: Western (229), Piedmont (270), Southern Piedmont (262), Capital (179), Cardinal (190), Eastern (251). In the computation of percentages, unknown and missing values generally have not been allocated to a response category, i.e., they are included in the denominator.

Population Characteristics

In synthesizing results of the survey, one should be aware of various demographic differences among the HSA's. These include greater rurality, lower incomes, older ages, and fewer high school graduates in the Western, Cardinal and Eastern HSA's; higher frequencies of nonwhites in the Capital, Eastern and Cardinal HSA's; and a higher frequency of females in the Eastern HSA.

Chronic Health Problems

Among the adult household population of North Carolina, NCCS findings show that nearly 7% had trouble getting around freely, about 32% had been told by a doctor that they had one or more of eight chronic diseases, and about 10% reported symptoms of some neurological disorder. Circulatory and musculoskeletal impairments were the

main cause of difficulty in getting around; circulatory problems, particularly high blood pressure, were the major type of chronic disease; and fainting spells and blackouts were the main neurological problems. Epilepsy was reported by less than 1% of the adults interviewed.

The chronic disease prevalence rate rose from 14 per 100 adults under age 30 to 102 per 100 adults aged 60 and older. One of the surprising findings may be that, compared to 16% of male respondents, 23% of female respondents reported diagnosed high blood pressure. This may be due to the greater exposure of females to various health care resources; hence, their greater chance for diagnosis.

As shown in Table 1, circulatory problems were found to occur with above-average frequency in the Southern Piedmont and Cardinal HSA's, and diabetes was more prevalent among Southern Piedmont and Capital residents. Few Easterners reported lung disease; however, lung cancer may be preferentially reported in the cancer category.

Table 1
Percentage of Adults Diagnosed by a Doctor
as Having a Particular Chronic Disease

	N.C.	Western	Piedmont	Southern Piedmont	Capital	Cardinal	Eastern
Diabetes	4.2	4.3	2.9	5.7	5.6	3.2	3.6
Cancer	3.2	3.5	2.6	2.3	3.4	3.7	4.0
High Blood Pressure	19.9	15.7	12.1	27.6	17.3	25.8	21.8
Heart Disease	7.2	6.1	8.9	7.7	6.7	7.9	5.6
Stroke	1.7	1.3	1.8	1.1	1.1	3.7	1.6
Glaucoma	1.0	0.4	1.5	0.4	1.1	2.6	0.4
Kidney Disease	6.3	6.5	6.3	5.7	7.3	5.3	6.7
Lung Disease	3.1	3.5	4.8	2.7	3.4	3.7	0.8

Translated to actual numbers, the statewide percentages of Table 1 show that in North Carolina the estimated numbers of diagnosed adults (18 and older) are as follows: diabetes (159,000), cancer (121,000), high blood pressure (754,000), heart disease (273,000), stroke (64,000), glaucoma (38,000), kidney disease (239,000), and lung disease (117,000). HSA's may estimate their counts by applying the percentages of Table 1 to estimates of the population 18 and older.

Restricted Activity Days

Statewide, an estimated 15 percent of respondents said they had to go to bed or otherwise restrict their activity due to illness or injury during the month prior to interview. The percentages ranged from 10 percent of Western residents to 18 percent of Cardinal residents. Persons with low incomes were more apt to experience restricted activity.

Tables 2 and 3 show data related to the duration and causes of restricted activity. Again, Cardinal residents experienced restricted activity more often and for longer periods; circulatory and accident-related conditions were the main causes. In all other HSA's, respiratory conditions were the main causes of restricted activity.

Table 2
 Percentages of Adults Experiencing No Restriction
 and Restriction Exceeding a Week's Duration Due
 to Illness or Injury During Preceding Month

	<u>N.C.</u>	<u>Western</u>	<u>Piedmont</u>	<u>Southern Piedmont</u>	<u>Capital</u>	<u>Cardinal</u>	<u>Eastern</u>
No Bed Days	88.3	90.8	92.6	85.3	88.7	84.7	86.8
More than 7 Bed Days	3.0	1.7	3.2	3.8	1.7	4.8	2.4
No Non-bed Restricted Days	85.8	90.4	85.9	83.7	84.3	83.7	86.3
More than 7 Non-bed Restricted Days	4.7	3.5	4.5	5.1	2.8	8.4	4.4
Mean Bed Days*	0.7	0.3	0.7	1.0	0.5	1.2	0.6
Mean Non-bed Restricted Days*	1.2	0.7	1.2	1.4	0.9	1.9	1.3

*Computed from grouped data.

Table 3
 Percentage Distribution of Restricted Adults
 by Cause of Restriction

	<u>N.C.</u>	<u>Western</u>	<u>Piedmont</u>	<u>Southern Piedmont</u>	<u>Capital</u>	<u>Cardinal</u>	<u>Eastern</u>
Circulatory	13.7	4.3	15.4	13.3	14.3	26.5	5.7
Respiratory	26.0	30.4	28.2	26.7	25.0	11.8	34.3
Musculoskeletal	10.3	8.7	17.9	8.9	7.1	8.8	8.6
Accident	12.7	13.0	7.7	11.1	17.9	14.7	14.3
Genitourinary	4.9	13.0	7.7	4.4	0.0	0.0	5.7
Other	32.4	30.6	23.1	35.6	35.7	38.2	31.4
(N)	(204)	(23)	(39)	(45)	(28)	(34)	(35)

Accessibility of Health Care

Table 4 shows the percentages of households located more than 15 miles from the closest doctor, closest dentist and adult's regular doctor. The latter results are based on 1,232 responses or 89 percent of the sample; most of the remainder (10%) reported no regular doctor.

Clearly, long travel distances to health care resources were most frequent in the Cardinal and Eastern HSA's, and long travel distances involved a regular doctor far more than the closest doctor.

For households seeking various health care services, Table 5 shows the percentages who could not get the service within 15 miles of where they lived. Close proximity to services was a particular problem in the Capital, Cardinal and Eastern HSA's; among Eastern residents, an above-average number seeking care reportedly lived more than 15 miles from each category of service. Altogether, physical therapy and services related to mental health, particularly alcohol and drug abuse services, often were not available close to home.

As discussed elsewhere (3), the accuracy of the series of questions used in Table 5 is open to some question although results are generally what one might expect geographically.

Table 4
 Percentage of Households Located More than 15 Miles
 from Specified Health Care Resource

	N.C.	Western	Piedmont	Southern Piedmont	Capital	Cardinal	Eastern
Closest Doctor	2.1	1.7	0.4	1.5	1.2	3.7	5.2
Closest Dentist	3.7	2.1	1.9	2.7	2.3	4.8	8.4
Regular Doctor*	9.3	9.5	8.7	7.3	6.9	11.0	12.8
*(N)	(1,232)	(209)	(241)	(232)	(158)	(172)	(220)

Table 5
 Households Seeking Specified Health Service:
 Percentage Who Did Not Get It Within
 15 Miles of Where They Lived

	N.C.	Western	Piedmont	Southern Piedmont	Capital	Cardinal	Eastern
Eye Examination	15.7	12.8	5.2	14.1	18.2	20.3	30.4
Speech/hearing Examination	17.6	6.7	0.0	12.9	28.1	35.0	33.3
Have Blood Pressure Read	5.1	1.9	2.5	3.4	5.7	7.8	11.9
Rehabilitation or Therapy for Physical Disabilities	28.9	23.1	4.8	31.6	23.1	46.7	50.0
Family Planning, Pap Smear, Breast Examination	9.3	0.0	5.0	5.7	19.2	9.1	20.0
Shots, Immunizations, Vaccinations	4.8	0.0	0.0	3.9	11.5	11.1	8.9
Chest X-rays or Testing for Tuberculosis (TB)	7.5	4.4	3.6	6.6	10.9	12.1	11.3
Services for Pregnant Women	11.3	5.6	5.5	7.7	30.4	10.5	18.8
Dental Services	7.4	9.4	4.3	2.1	5.0	11.3	18.0
Physical Examination	6.3	0.0	3.2	2.9	8.8	11.8	14.5
Emergency Medical Care	13.3	9.4	8.8	11.0	17.1	16.3	23.8
Family Counseling or Child Guidance Services	20.5	0.0	0.0	20.0	27.3	60.0	29.4
Alcohol or Drug Abuse Services	34.0	25.0	10.0	30.0	35.7	66.7	55.6
Treatment for Mental Disabilities	28.6	0.0	0.0	40.0	31.6	50.0	41.7
Other Health Services	11.1	10.0	0.0	25.0	24.1	0.0	22.2

Utilization of Health Care Resources

Table 6 shows various indicators of health care utilization. The following statements attempt to summarize these data for each HSA:

- Western residents used a local health department, had a regular doctor and went to a dentist with above-average frequency; however, doctor utilization was generally low as was Medicaid utilization.
- Piedmont residents appeared average with respect to all categories of health care utilization except that impaired adults were relatively more likely to have seen a doctor within 3 months and Medicaid utilization was low.
- Southern Piedmont residents also utilized health care resources with about average frequency except that adults appeared to receive care from the closest doctor with below-average frequency.

Table 6
Indicators of Health Care Utilization

	N.C.	Western	Piedmont	Southern Piedmont	Capital	Cardinal	Eastern
Percent of Households Receiving Care Within the Last Year from:							
A Doctor	93.0	90.4	95.6	91.8	92.7	96.3	91.6
Local Health Department	26.2	27.0	25.4	25.6	25.7	27.4	26.6
Dentist's Office	74.0	78.9	74.5	73.7	83.0	68.3	67.3
Mean Doctor Treatments per Household per Year*	6.1	6.0	6.0	5.9	6.0	6.7	6.0
Mean Dental Treatments per Household per Year*	3.0	3.2	3.1	3.2	3.6	2.6	2.6
Percent of Adults Having a Regular Doctor	90.2	92.2	90.3	88.9	88.8	92.1	89.2
Percent of Adults With a Regular Doctor Receiving Care in the Last Year	76.0	68.1	78.5	77.1	79.7	80.7	73.3
(N)	(1,232)	(210)	(242)	(231)	(157)	(171)	(221)
Percent of Adults Receiving Care from Closest Doctor in the Last Year	56.1	54.6	53.7	49.2	63.6	57.0	61.0
Percent of Adults Receiving Care from Closest Dentist in Last Two Years	50.3	52.7	49.8	48.4	53.7	49.7	48.8
Percent of Impaired Adults Having Seen a Doctor							
Within 3 months	57.3	12.5	75.0	50.0	69.2	77.8	60.0
Within 6 months	65.6	43.8	75.0	61.1	69.2	77.8	66.7
(N)	(96)	(16)	(16)	(18)	(13)	(18)	(15)
Percent of Restricted Adults Having Seen a Doctor for the Condition Causing Restricted Activity	74.6	77.8	75.6	72.4	65.5	83.8	71.9
(N)	(220)	(27)	(41)	(47)	(29)	(37)	(39)
Percent of Adults Personally Receiving Health Services that were Paid by Medicaid	8.7	6.8	7.5	8.8	11.3	10.3	8.3

*Calculated from grouped data.

- Capital area residents generally utilized dental services and the closest doctor with above-average frequency, and Medicaid utilization was the highest in the state. However, restricted activity was relatively unlikely to have been associated with a doctor's care.
- Cardinal residents were relatively likely to have a regular doctor, to utilize his services and to use health department services. Impaired and restricted adults were also likely to have seen a doctor, and Medicaid utilization was high. Utilization of dental services was low.
- Eastern HSA residents used health department services and the closest doctor with above-average frequency; utilization of dental services was low.

Findings for doctor utilization in the Cardinal and Eastern HSA's contrasts with the fact that doctors are relatively scarce in many of these counties. At the same time, doctor utilization was below average in the Western HSA where doctors are fairly abundant.

Regarding the reasons given for failure to see a doctor for conditions causing restricted activity, most such respondents (two-thirds) said they could not afford it.

Other demographic and socio-economic characteristics found to be associated with health care utilization include the following:

<u>Resource</u>	<u>Characteristics of Main Users</u>
Local Health Department	Black, low income, large family size
Regular Doctor	Female, age 60 and older, low income and education, small family size
Closest Doctor	Age 60 and older, low income
A Dentist	White, under age 60, higher income and education, larger family size
Closest Dentist	White, under age 60, higher income and education

Utilization of dentists was associated with greater variation among population subgroups than was utilization of doctors. This may reflect a greater leveling effect of various forms of health insurance on medical care than on dental care (3).

Perceptions of Health Care

Table 7 displays percentages relative to citizens' perceptions about health care. Residents of the Cardinal and Eastern HSA's were less apt to view medical care in their areas as adequate, and Southern Piedmont health department users were less apt to feel those services were satisfactory. Surprisingly, residents of one of the lower-income areas, the Eastern HSA, were most likely to believe a health department should charge for services.

Table 7
Indicators of Citizens' Perceptions of Health Care

	<u>N.C.</u>	<u>Western</u>	<u>Piedmont</u>	<u>Southern Piedmont</u>	<u>Capital</u>	<u>Cardinal</u>	<u>Eastern</u>
Percent adults believing medical care in their area is adequate	62.9	67.7	63.9	69.4	65.0	51.6	57.5
Percent health department users feeling services were satisfactory (N)	91.7 (349)	93.2 (59)	91.2 (68)	86.9 (61)	95.7 (46)	90.0 (50)	93.8 (65)
Percent adults believing health departments should charge for services	28.2	26.6	28.9	26.2	27.0	22.6	36.0



Summary

Residents of the Cardinal HSA appear to experience more illness and injury than others, and circulatory conditions appear particularly prevalent. Consistent with this, Cardinal residents utilize health care resources (except dentists) with above-average frequency. At the same time, Cardinal residents are relatively dissatisfied with health care in their area and are least apt to believe health departments should charge for services.

At the opposite end of the health spectrum, adults in the Western HSA appear relatively healthy, respiratory conditions being the major cause of restricted activity. Although doctor utilization is low, Western residents use local health departments and dentists with above-average frequency, and they are likely to view these and other health care services as being satisfactory.

As a whole, NCCS results concerning health problem differences among the HSA's are generally consistent with what one might expect, based on geographical patterns in mortality.

REFERENCES

- (1) North Carolina Department of Administration, Division of State Budget and Management. "How the Survey was Conducted and What It Cost," North Carolina Citizen Survey, Vol. 2. Raleigh, May 1977.
- (2) North Carolina Department of Administration, Division of State Budget and Management. "Guide to the Use of Economic Effectiveness Measurements," North Carolina Citizen Survey, Vol. 4. Raleigh, May 1977.
- (3) North Carolina Department of Administration, Division of State Budget and Management. "Guide to the Use of Health Effectiveness Measurements," North Carolina Citizen Survey, Vol. 3. Raleigh, May 1977.
- (4) North Carolina Department of Administration, Division of State Budget and Management. "How Well Off Are North Carolinians?" North Carolina Citizen Survey. Raleigh, May 1977.

The PHSB wishes to express our enthusiastic endorsement of the North Carolina Citizen Survey and to encourage efforts to have it conducted on a recurring basis. We believe we speak for all cooperating agencies in commending the Division of State Budget and Management for taking the lead in this worthwhile venture, and we particularly acknowledge the exemplary work of Ms. Gloria A. Grizzle, NCCS Project Coordinator.

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