Changes in Supply and Distribution of Family Physicians in the United States

David L. Spencer, MD, and Gabrielle D'Elia, PhD
Springfield, Illinois

From 1970 to 1980, the supply of family and general physicians in the United States increased by 4 percent. The overall increase was not felt uniformly among the states. Rather, the distribution reflected general regional trends in the United States.

The analysis derives from a comparison of 1970 and 1980 American Medical Association and Bureau of the Census data. A study is made of changes in the supply of family and general physicians, in the number of residents in family practice programs, in the supply of general internists and pediatricians, in the population, and in the per capita income of each state.

Regions with economic and population growth also benefited from immigration of family physicians and from new residency programs. They had fewer barriers to growth in the form of primary care competitors and elderly general practitioners requiring replacement. The dominance of market forces in channeling the effects of educational and manpower politics raises challenges for the specialty of family practice.

During the decade from 1970 to 1980, physician manpower policies in the United States were based on assessments that ranged from an initially defined shortage[1] to a decade-end projected surplus.[2] From the start of the decade, attention was directed to problems of geographic distribution of physicians,[3] but by the start of the 1980s, several important studies[4,5] suggested that a significant dispersal of physicians was underway.

The specialty of family practice benefited from federal, state, professional, and private foundation supports for improving physician supply and distribution. From 1970 to 1980, the supply of family and general physicians in the United States grew from 57,948 to 60,049, an increase of 4 percent. The major input was the number of family physicians being produced in the many new and rapidly expanding residency programs. At the same time, family and general practice had a large group of elderly physicians being lost to the supply through retirement and death. Not until 1975[6] did the supply of new residency-trained family physicians offset the loss, so that the overall supply could show growth for the last half of the decade.

While nationwide the supply of family and general physicians increased from 1970 to 1980, the pattern of growth among the states reflected strong regional differences. Developing educational and physician manpower policies that do not simply follow market forces is a challenge facing the specialty of family practice.

METHODS

The hypothesis of this research is that changes in the supply of family and general physicians in the United States from 1970 to 1980 are the result of general regional shifts in the country. Market forces in the United States lead to growth in certain states and relative decline in other states. The regions experiencing growth benefit from population increase and economic vitality. In terms of physician supply, they are able to attract new physicians, to support training programs that produce new physicians, to replace those physicians lost through attrition, and to blunt the effect of

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From the Department of Family Practice, School of Medicine, Southern Illinois University, Springfield, Illinois. Requests for reprints should be addressed to Dr. David L. Spencer, Department of Family Practice, Southern Illinois University School of Medicine, PO Box 3926, Springfield, IL 62708.

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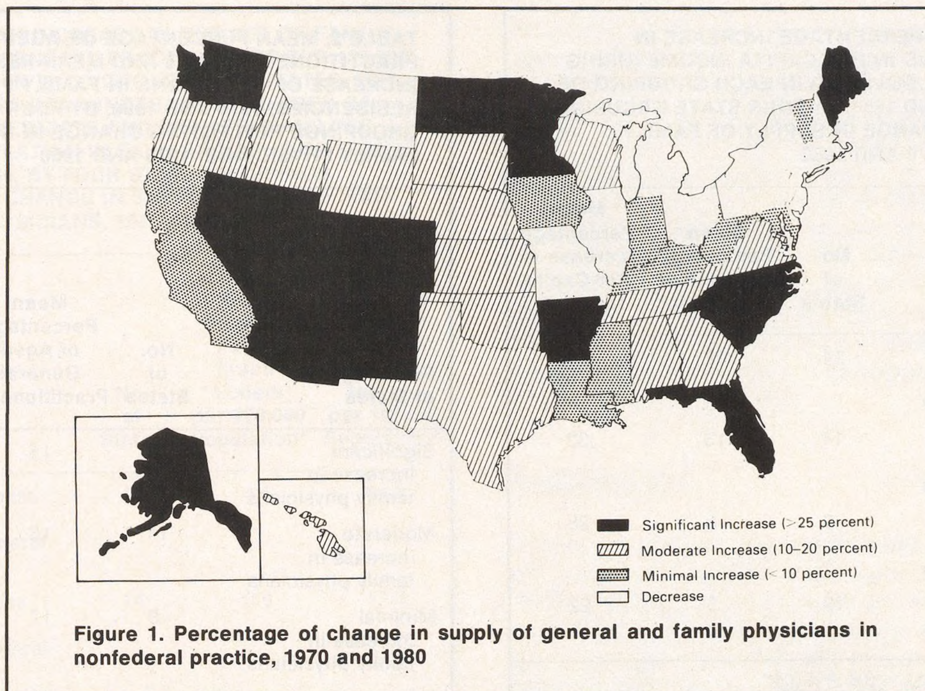

Figure 1. Percentage of change in supply of general and family physicians in nonfederal practice, 1970 and 1980

competitive obstacles to growth in physician supply.

These concomitants of regionalization can be operationalized as variables for analysis. Changes in the population and in per capita income for each state in 1970 and 1980 indicate the demographic and economic shifts. Measures for a favorable regional growth in family physician supply include the increase in physicians in family medicine residency programs in each state from 1970 to 1980, the number of general practitioners aged 65 years and older in each state in 1975, and the increase in physicians in each state reporting a specialty of general internal medicine or pediatrics from 1970 to 1980.

The analysis involves looking at increases in the supply of family physicians and general practitioners nationally and by state over the decade and trying to relate the change to the indicators of regionalization. Comparisons are made among all 50 states and then by combining the states into categories based on the size of percentage increase in family physician supply and change in family physician to population ratios.

Data on changes in the supply of physicians are available in publications of the American Medical Association.[6-9] Volumes describing physician distribution and characteristics of the physician supply contain distinctions reflecting physician's self-designation of specialty, employment (federal or nonfederal), professional activity (patient care, administration, medical teaching, or research), and practice (office-based, full-time hospital staff, or residency practice). Population and per capita income data are available from the United States Census for 1970[10] and 1980.[11] This analysis is limited to physicians in nonfederal practice, and comparisons are made to the civilian and noninstitutionalized population in the states.

RESULTS

From 1970 to 1980, the supply of general and family physicians in nonfederal practice increased by 6 percent, from 54,938 to 58,004. As Figure 1 indicates, however, this growth was distributed very unevenly among the states. The states are placed into four categories reflecting the amount of change in their supply of family physicians. Fourteen states with increases of more than 25 percent are categorized as having significant increases. Another 14 states with increases of 10 to 25 percent are placed in a moderate increase category. Nine states with increases of less than 10 percent form a minimal increase group. Finally, the 13 states with decreases in their supplies of family and general physicians from 1970 to 1980 are labeled a fourth group, decreased supply. The range from a 70 percent increase (Florida and Alaska) to a 30

TABLE 1. MEAN PERCENTAGE INCREASE IN POPULATION AND IN PER CAPITA INCOME (USING 1972 CONSTANT DOLLARS) IN EACH GROUPING OF STATES, 1970 AND 1980, BY FOUR STATE GROUPINGS REFLECTING CHANGE IN SUPPLY OF FAMILY PHYSICIANS, 1970 AND 1980

Grouping of States	No. of States	Mean Percentage Increase in Population*	Mean Percentage Increase in Per Capita Income**
Significant increase in family physicians	14	22	29
Moderate increase in family physicians	14	13	32
Minimal increase in family physicians	9	8	28
Decrease in family physicians	13	5	22

$F_{3,46} = 6.91$, $P < .001$*; $= 3.6$, $P < .05$**

TABLE 2. MEAN PERCENTAGE OF AGED GENERAL PRACTITIONERS IN 1975 AND MEAN PERCENTAGE INCREASE OF PHYSICIANS IN FAMILY PRACTICE RESIDENCIES, 1970 AND 1980, BY FOUR STATE GROUPINGS REFLECTING CHANGE IN SUPPLY OF FAMILY PHYSICIANS, 1970 AND 1980

Grouping of States	No. of States	Mean Percentage of Aged General Practitioners*	Mean Percentage Increase in Family Practice Residents (Hundreds of Percent)**
Significant increase in family physicians	14	15	14
Moderate increase in family physicians	14	16	13
Minimal increase in family physicians	9	17	7
Decrease in family physicians	13	27	3

$F_{3,46} = 16.58$, $P < .001$*; $= 3.5$, $P < .05$**

percent decrease (New York and Massachusetts) is broad and raises questions about the factors related to such divergent outcomes.

The pattern depicted in Figure 1 suggests the importance of regionalization as an explanation for the changes in the supply of family and general physicians. The market forces resulting in a shift in growth away from the older states in New England, the Middle Atlantic states, and the Midwest toward states in the South and West have influenced physician distribution as well.

The changes in physician supply can be related to the variables used to indicate regionalization. Table 1 presents the mean changes in population and per capita income in each of the four groupings of states. Those states with the greatest population growth had the greatest percentage increase in family physicians, and conversely, the states that lost family physicians had the smallest percentage of population growth. The states with increases in supplies of family physicians also had a larger percentage of increases in per capita income than the states with an overall decline in family physicians.

The number of aged general and family practitioners provides an estimate of the pool of physicians to be replaced. In 1975, 20 percent of general and family physicians in nonfederal practice in the United States were aged 65 years or older. For each of the four groupings of states, the mean percentage of physicians who were 65 years of age or older in 1975 is presented in Table 2. Approximately 16 percent of the physicians were in this replacement category for the three state groupings with an overall growth in supply. In the fourth group, with a decrease in supply, the mean percentage of general practitioners aged 65 years or older was 27 percent. The attrition expected in these states constituted a major obstacle to growth.

Growth required replacing those lost to migration, retirement, and death, and depended on the availability of replacements. In 1970 the United States had 1,336 physicians in training in general and family practice residency programs. In 1976 there were 4,388 physicians in family practice residencies, and by 1980 the number had increased to 6,339 physicians. Over the decade, then, the growth rate was 374 percent. Table 2 presents the mean percentage change in the supply of residents in states in each of the four growth categories displayed in Figure 1. The mean percentage increase ranged from 280 to 1,406 percent. The small percentage of increase in states with the largest percentage of need for replacement spelled problems for most of the northeastern quarter of the United States.

The data in Figure 1, coupled with Tables 1 and 2,

TABLE 3. MEAN INCREASE IN NUMBER OF FAMILY PHYSICIANS/GENERAL PRACTITIONERS PER 100,000 POPULATION IN EACH GROUPING OF STATES, 1970 AND 1980, AND MEAN INCREASE IN NUMBER OF GENERAL INTERNISTS AND PEDIATRICIANS PER 100,000 POPULATION IN EACH GROUPING OF STATES 1970 AND 1980, BY FOUR STATE GROUPINGS REFLECTING CHANGE IN SUPPLY OF FAMILY AND GENERAL PHYSICIANS, 1970 AND 1980

Grouping of States	No. of States	Mean Increase Family Practitioners per 100,000 Population*	Mean Increase General Internists and Pediatricians per 100,000 Population**
Significant increase in family physicians/general practitioners	14	4.5	14.8
Moderate increase in family physicians/general practitioners	14	0.9	13.3
Minimal increase in family physicians/general practitioners	9	−1.0	15.1
Decrease in family physicians/ general practitioners	13	−3.8	19.7

$F_{3,46} = 28.4$, $P < .001$*; $= 3.63$, $P < .05$**

indicate that the forces leading to regional shifts were important for explaining the percentage of increase in the family physician supply from 1970 to 1980. Measured against itself, the specialty of family practice made gains in 37 of the 50 states, especially in the new growth centers of the South and West. Even with the benefit of new and expanded residency programs, however, the specialty did not produce a large enough supply of new physicians; nor did New England, the Middle Atlantic states and Midwest have the demographic and economic conditions necessary to attract a large enough pool of family physicians to replace the significant percentage lost through attrition.

The increases in number and percentage of family physicians can also be measured against changes in the population. Table 3 shows changes in the number of general and family physicians per 100,000 population between 1970 and 1980. Some states that increased their absolute supply of family physicians over the decade actually lost ground relative to a growing population. Table 3 also presents the change in number of primary care competitors (general internists and pediatricians) per 100,000 population for 1970 and 1980. These competitors made significant gains throughout the United States. In 1970 there were 52,422 general internists and pediatricians in nonfederal practice. By 1980 the number had grown to 94,400, an increase of 80 percent. As Table 3 indicates, however, the patient growth came in the 13 states where family medicine was suffering a decline. For every 100,000 people in these states, there was a mean increase of 20 internists or pediatricians and a mean loss of four family physicians.

DISCUSSION

Family practice received significant support from governmental and private health care services during the 1970s. Medical school programs were important for attracting students to the specialty, and residency programs prepared a new supply of family physicians. For the specialty as a whole, this production pipeline produced significant results by mid-decade, when the trend for a decreasing supply of general practitioners was finally stemmed and then reversed. By the end of the decade, the specialty had built a strong membership base with solid supports in the form of medical school departments, residency programs, faculties, associations, and publications.

Yet, as this analysis has shown, the encouraging overall growth of family medicine was not felt uniformly among the states. The same market forces resulting in the emergence of new growth centers in the south and the west of the United States were responsible for significant growth in family medicine in those regions. Conversely, the economic declines in the large, older industrial states in New England, the Middle Atlantic states, and the Midwest were accompanied by a decline in family physicians, measured in both absolute terms and relative to the population. Of potentially greater concern is the finding that at the same time, primary care competitors were making their greatest gains relative to the population in the states in the northeastern quarter of the nation.

The analysis raises challenges for family practice. During a decade of relatively generous support, the supply of family physicians were redistributed toward targets of least resistance, eg, regions with favorable economic conditions, growing populations, young physician age structures, new and expanding residency programs, and relative absence of competitors. The specialty now is facing a period of diminishing support. Leaving distribution to market forces has the potential effect of significantly weakening the spe-

cialty. The older states in the northeastern quarter of the United States will have a sizable percentage of general practitioners coming to retirement age during the 1980s. Influencing the graduates of residency programs in those states to remain and enter practice where the economic conditions and large competitor supply may make living and practicing less advantageous is a challenge. The residency programs themselves will find their resource base diminishing in face of a proclaimed physician supply.

New market forces such as diagnostic-related groups (DRGs), educational cost-reimbursement formulas, and growth of prepaid group health care mechanisms must be carefully weighed by family practice leaders if the specialty is to maintain a vital and competitive position in academic medicine and the marketplace.

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