Computer Use by Family Physicians in the United States

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In March 1988 the American Academy of Family Physicians (AAFP) sampled approximately 4400 active members to ascertain their interest in office computers. After two mailings an overall response rate of 58.9% was achieved.

Approximately 45% of active members currently use a computer in their office practices while 3% use a service bureau. There is a wide variation of use by US census region with approximately one in two family physicians in the West North Central census region using office computers compared to one in three in the Middle Atlantic. Accounts receivable and billing are the principal applications and are used by 86.9% of family physicians with computers in their offices. Very few are using a computer for medical records. Approximately two in five indicated that they have a personal or home computer. It is estimated that approximately 65% of AAFP active members have access to a computer either at home or at their office.

R apid change in computer technology has led to the development of many uses of computers for office practice, and business applications of computers continue to be the first priority for most physicians. As medical artificial intelligence is developed, however, physicians will turn to computers to assist in diagnosing complex problems and to recommend patient management.[1] As cases of patients' lives saved through the use of computers by physicians continue to be documented, physicians will accept the clinical use of medical databases.[2] In 1986, in personal conversations, an editor of *Physicians & Computers* said there were approximately 650 vendors of medical software, and recently a knowledgeable source indicated there are over 1300 vendors of medical software.

The American Academy of Family Physicians (AAFP) has documented the use of computers by family physicians in 1983 and 1986.[3,4] In a 1987 study by the American Medical Association, 44.5% of physician respondents indicated that they used a computer for medical practice activities, while 32.7% of general practitioners reported the use

of computers for such activities.[5] More recent studies have documented the regional use of computers by physicians.[6]

The American Academy of Family Physicians continues to provide educational materials to its members related to the use of computers.[7] This survey of family physicians on the use of computers was undertaken to ascertain the changing needs of AAFP members.

METHODS

In March 1988 a four-page questionnaire was sent to 4400 active members (out of approximately 34,900 total) of the American Academy of Family Physicians whose mailing address was in one of the 50 states or District of Columbia. The sample was not limited to those in direct patient care. The sample was stratified by US census region. Each region was sampled at a different rate so that an adequate regional response could be obtained to generate an internal AAFP report for each region.

After two mailings, an overall response rate of 58.9% was achieved. As a result of the study instrument, response rates were lower than similar AAFP studies. If questions relating to practice income and professional liability had not been included on the survey instrument, it is believed that the response rate would have been higher.

To compensate for nonresponse in each census region, all

TABLE 1. NUMBER OF FAMILY PHYSICIANS BY COMPUTER USE, JULY 1988

Computer Usage	Estimated Number	Estimated Percent
Total	34,900	100.0
Own, rent, or lease a computer located in office	15,700	45.0
Service bureau	1,100	3.2
Do not use a computer	17,700	50.7
Not reported	400	1.1

TABLE 2. PERCENTAGE OF FAMILY PHYSICIANS BY COMPUTERIZED MEDICAL APPLICATIONS, JULY 1988*

Medical Application	Estimated Number	Estimated Percent
Total estimated number using a computer in office or a service bureau	16,800	100.0
Accounts receivable and billing	14,600	86.9
Claims preparation for third-party payers	12,300	73.2
Word processing	7,200	42.9
Appointment scheduling	4,700	28.0
Partial medical records	2,900	17.3
Complete medical records	300	1.8

*Numbers and percentages do not add to the total or 100.0, as respondents could check more than one category

estimates were adjusted not only by the appropriate stratum sampling fraction, but also by the response percentage for each stratum. Thus, the estimate for each stratum has been weighted by a fraction in which the numerator is the population of the stratum and the denominator is the number of respondents in that stratum.

RESULTS

The nonrespondent group appeared to differ from respondents in some areas: they were less likely to be a family practice residency graduate, less likely to be an American Board of Family Practice (ABFP) diplomate, and less likely to be a US medical school graduate. The study also may be biased toward members who are more actively involved with AAFP activities and thus more likely to respond to an AAFP survey. For purposes of this discussion, however, the following results will be generalized to all active AAFP members.

It is estimated that approximately 45.0% of active members currently use a computer in their office practices (Table 1). This proportion represents an increase of 21 percentage points from the last survey conducted by the AAFP in February 1986, when 23.2% reported that they used a computer in their office practices.[4] In an 1983 study performed by the AAFP, approximately 14.0% of active members indicated that they owned, rented, or leased a computer physically located in their offices.[3] The methodologies of the 1986 and 1983 AAFP studies differ from this 1988 sample survey, however, in that both former studies were census surveys of all active members.

Although it is estimated that over 15,700 active AAFP members currently own, rent, or lease a computer in their offices, the percentage of members who own a computer in each census region varies widely from a high of one in two

family physicians in the West North Central census region to a low of one in three in the Middle Atlantic census region.

Accounts receivable and billing continue to be the primary application. Eighty-seven percent of AAFP members who either used a computer in their office or batched work for a service bureau indicated that they used the computer for accounts receivable and billing (Table 2). Approximately three in four active members with a computer used it for claims preparation for third-party payers (73.2 %). Word processing was used by approximately 42.9% of physicians with computers. Approximately one in four active members used appointment scheduling on a computer (28.0%). Relatively few family physicians were using a computer for either partial medical records (17.3%) or complete medical records (1.8%). These percentages do not vary markedly from previous data collected by the AAFP.

Of the estimated 17,700 active members who are not using a computer in their office practices, 43.8% indicated they plan to computerize their medical practices in the next five years. This percentage does not vary much from the AAFP study performed in February 1986, when approximately 43.1% of those active members without a computer indicated that they planned to computerize within the next 5 years.

Approximately two in five active members (40.7%) indicated that they have a personal or home computer on which they do not store patient records. It is estimated that

19.7% had a personal or home computer that was IBM compatible, 14.4% indicated a computer that was Apple compatible (as worded on the survey instrument), and approximately 6.6% did not indicate the compatibility of a personal computer. It is estimated that almost 7000 AAFP members have an IBM-compatible personal or home computer and over 5000 have an Apple personal computer. There are variations by census regions: for example, family physicians in the Mountain region are twice as likely to have bought an IBM-compatible rather than an Apple-compatible home computer (23.6% compared to 12.9%), whereas in the Pacific region there were no differences in the percentages of family physicians who owned IBM- or Apple-compatible home computers (22.0% compared with 19.2%).

Overall, it is estimated that approximately 65% of all AAFP active members (22,700 physicians) have access to a computer at either their home or office. Of this number, 23.4% or over 8100 family physicians have a modem to access outside databases or to send third-party claims. Furthermore, it is estimated that 5900 members who have modems have an interest in accessing an information network designed to meet the needs of family physicians.

COMMENT

Although there was a dramatic increase in the percentage of family physicians using a computer in their office prac-

tices in July 1988 compared with January 1983, it should be recognized that the population surveyed has changed with more young family practice residency graduates entering practice. The increase in percentages may reflect, therefore, both a change by some physicians in choosing to computerize their office as well as a change in the population surveyed.

Because the sample included all active members of the AAFP and was not limited to family physicians in direct patient care, the percentages of computer use might have been higher had the sample been limited to nonfederally located family physicians in direct office-based patient care.

References

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