

An Investigation of the Educational Needs of Health Sciences Library Manpower:

Part VII: Summary and Conclusions*

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ABSTRACT

The major findings and conclusions of a survey of manpower in health sciences libraries of the United States in 1969 are summarized. Although there does not appear to be a serious manpower shortage in terms of budgeted positions which are unfilled (demand), the manpower situation can still be considered serious when we introduce into our evaluation of the situation the question of existing levels of training and the urgent requirement (need) to bring manpower levels to a point at which adequate information services can be provided to the whole health sciences community. This is the final paper in a series of papers on a manpower study which also summarizes and analyzes the manpower data obtained by the American Hospital Association survey of 1968 and presents a number of general conclusions and recommendations for manpower planning for health sciences libraries.

EVERY profession has a responsibility to society to maintain its membership at a level adequate in number and in quality to meet its objectives. It also has a responsibility to maintain its competence in the face of constantly changing social needs and requirements. These are, of course, among the reasons that the Medical Library Association has shown such great interest in programs of accreditation, certification, and continuing education. However, in order to meet its obligations, and in order to

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make wise and valid decisions about its educational programs, a profession must constantly assess changing needs. For this reason MLA sponsored a manpower study of health related libraries to determine some of the characteristics of the people staffing them and to arrive at some judgments about educational needs.** The study began in March 1968, and the methodology and findings have been reported in a series of five articles (1-5), which appeared in the *Bulletin*, and a sixth paper on a Task Analysis Index developed for the study, which will appear in *Library Quarterly* (6). The purpose of this paper is to summarize some of the findings of the study and to attempt to examine some of their implications with regard to future manpower planning.

POPULATION BASE OF THE MANPOWER STUDY

The study began by identifying all health related programs and institutions which might provide a setting for information services. This was done for two reasons: first, directory information about health sciences libraries was incomplete; and second, it was necessary to define health sciences library manpower and determine its adequacy or inadequacy in terms of the clientele served. Some 14,000 institutions and programs were identified, of which approxi-

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mately half were hospital based. Since the American Hospital Association was in process of surveying all hospital libraries, the AHA data which resulted from their survey formed the basis of our analysis of hospital libraries and hospital library manpower. The study reported here concentrated on the 6,841 nonhospital health related institutions and programs.†

In the joint survey, 2,099 nonhospital libraries were identified. One of their principal characteristics was that they were extremely heterogeneous in nature, both in terms of the numbers of programs they served and in terms of the extent of their commitment to health related programs (7). For the purpose of this study, a library was classified as *primary* if it was predominantly concerned with service to health related personnel, as *secondary* if someone on its staff was identified with this kind of service, and as *peripheral* if the library was identified with a health related program but had no specific personnel assigned to serve the program. It can be seen, therefore, that a significant part (39%) of the service to health sciences personnel stems from libraries that do not regard service to the health sciences as a primary commitment. This factor becomes significant when one considers how it relates to identifying sources of support for health related library programs and to identifying personnel for manpower studies and educational purposes. It is also evident that not all health related institutions and programs have adequate access to library and information services. It is also important to recognize that the heterogeneity of the library population creates difficulties in establishing means of measuring library needs.

HOSPITAL LIBRARY MANPOWER

There were some methodological problems associated with the data obtained by the survey of hospital libraries (8). Less than half of the hospitals responded, and many of those that did respond reported more than one library per hospital. The lowest response rate was from the smaller hospitals, and, while we cannot equate nonresponse to nonexistence of library services,

† The results of the survey of this population were used as the basis for a questionnaire issued jointly by this study group and the AMA/MLA Statistical Survey which produced the Directory of Health Sciences Libraries. Supported by NLM Grant LM 0493.

all evidence indicates that there is a close correspondence. One of the problems is whether a library is defined by its book collection or by the services it provides. When the latter criterion is applied, the proportion of hospitals providing library service falls considerably lower. The lack of trained library personnel in hospitals represents one of our most serious manpower gaps. All indications are that this gap will become even more pronounced as our hospital population expands. The number of hospital beds required in 1975, if current occupancy rates continue, is estimated at between 1,025,000 and 1,075,000. This is 40 to 50 percent more beds than there were in 1965. This represents an addition of 265,000 to 335,000 beds, which may represent an additional thousand or more hospitals (9).

There is no clear agreement on standards for hospital libraries or on how they should be staffed. Although the population is heterogeneous to some degree, the number of beds in each hospital does provide a quantitative criterion against which standards can be measured. The American Library Association *Standards for Library Services in Health Care Institutions* (10), published recently, beyond stating the factors which relate to the number of professional and nonprofessional staff members, skirts the issue of standards, except to say that "library service should not be provided without continuing professional supervision, since a qualified, salaried librarian is essential for the establishment and maintenance of service." The standards add that the Chief Librarian, at least, should be a graduate of an accredited library school, with MLA certification and training in the biological sciences if possible. Others have had somewhat more courage, as demonstrated by a group in Pennsylvania which recommends one librarian with a B.S. for hospitals of 100 beds, one librarian with an M.S.L.S. for hospitals with 200 beds, two M.S.L.S.'s for 750 beds, three for 1,000 beds, and four for over 1,500 beds, along with the necessary supporting personnel (11). The minimum guidelines published by the Connecticut Regional Medical Program (12) are somewhat more modest. They recommend only a half-time employee for hospitals up to 200 beds, one full-time employee for up to 400 beds (qualifications not specified), and a professional medical librarian only for hospitals of more than 400 beds. It is not clear whether the

Pennsylvania guidelines represent utopian goals or actual standards, but it is easy to see that, in relation to any minimum standard, hospital library manpower is grossly inadequate.

If it was not obvious before, the evidence is ample now, that hospital libraries are not adequate to meet our needs, no matter what standards they are measured against, and that the situation has not changed significantly since the last surveys were reported (13). Although 4,315 libraries were covered by the AHA survey, only 2,872 individuals were described as occupying positions with the title "librarian." Of these, only 851 (less than 30%) held the B.A. degree, and only 726 (25%) held master's degrees, of which an undetermined number were library degrees. These manpower deficiencies become even more noteworthy when the question arises as to whether or not positions are salaried, and also as to whether the positions are full- or part-time (14).

NONHOSPITAL LIBRARY MANPOWER

It was not possible within the time constraints of the study to analyze all of the available data obtained about the characteristics of nonhospital personnel, but some of the more relevant aspects have been analyzed and reported (15). One of the most significant findings for purposes of manpower planning is the fact that over 20% of the female professional librarians and over 10% of the male professional librarians will reach retirement age in the next ten years. Projecting this against the total number of librarians with the M.S.L.S. reported in the survey (2,260), this represents an attrition of over 300 positions over the next ten years, without taking into consideration the obvious need to upgrade many of the positions not now being filled at the M.S.L.S. level and the attrition due to other causes. The attrition rate due to age is even more striking when it is noted that over 25% of the chief librarians covered by the survey will reach retirement age in the next ten years.

The profile of educational characteristics of the work force has even greater significance for manpower planning, training, and continuing education. Only 20% of the professional librarians reported undergraduate majors in the natural sciences, and of reported graduate degrees in addition to the M.S.L.S. only 21.6% were in the natural sciences. There has been some

controversy about the necessity for substantive content relating to the biomedical sciences in education for health science librarianship. Librarianship began as an occupation of scholars for whom the organization of artifacts was only a necessary auxiliary enterprise to their main activity—the pursuit of knowledge. It has been only about a hundred years or so since we began to separate the auxiliary enterprises from the primary objectives. Have we perhaps gone too far in this direction, and do not our training objectives and continuing education programs reflect too much the emphasis on the technical aspects of our mission at the expense of subject content of the literature with which we deal?

Another item of educational data which has a direct bearing on our training and continuing education programs is that only 35.9% of the professional librarians have taken a library school course in medical librarianship. This is offset to some extent by exposure to continuing education programs. Exposure to continuing education drops off dramatically at the level of four courses. While 45.5% of the professional librarians have taken three or more courses, only 14% have taken as many as five. There is some variance related to regional distributions, but it is difficult to evaluate. Other relevant information comes from the data on job mobility, which indicates that 61% of the professional librarians are holding their first job in a health sciences library, despite the fact that only 12% are holding their first library jobs. This shows that a sizeable proportion of those in the professional work force have come from positions in libraries not health related.

The data on manpower *utilization* in relation to training have more significant implications. Staff positions in the survey of libraries were reported as professional or nonprofessional depending on *position title* rather than on the holding of the *M.S.L.S. degree* as was the case in the following personnel survey. In the first case the ratio of full-time professional to nonprofessional personnel was approximately 1 to 1 (2,406 to 2,400, not including student assistants, who were reported separately). These data seem to indicate that a significant part of the work performed in libraries by professional librarians may be of a nonprofessional nature. Even when this ratio is based on the possession of the graduate degree, it does not improve

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greatly; i.e., the ratio of degree holding librarians to staff members without degrees is 1 to 1.5. These suppositions are supported to some extent by the results of the Job Task Index study which was undertaken as a part of this investigation (16). Staff members, both professional and nonprofessional, were asked to identify a series of tasks according to primary and secondary responsibility and commitment of time. Task analysis perhaps does need to be broken down into smaller and more discrete units than we found possible in this survey, but the data clearly showed that nonprofessional tasks were being performed by professional personnel. A major effort of our training programs, therefore, might be to concentrate on more effective utilization of manpower, including the training of people to perform nonprofessional library tasks. The corollary of this proposition is, of course, that professionals must be prepared to upgrade their own efforts.

SUPPLY AND DEMAND FOR MEDICAL LIBRARIANS

The library survey revealed vacancies in 202 budgeted professional positions as compared with an inventory of 2,406 full-time filled positions. (It is important to remember that this is based on data obtained in 1969.) This represented a shortage of over 7% for professional positions and 3% for nonprofessionals. Less than five years ago the shortage of professional librarians was described as "the most serious problem affecting the institutional health of public libraries." The average position vacancy rate for public libraries was about 7% in 1960 and 1962, and it even fell back slightly to 6.7% in 1965 (17). The estimated budget vacancy rate for college and university librarians in the same period was 5.8%, when similar cries of manpower crises were being heard (18).

Projecting manpower demands or needs is probably as hazardous as trying to select winners at the race track and sometimes seems to have about the same kind of scientific basis. The hazards in manpower forecasting, however, are considerably reduced by the fact that although the manpower expert may place the bet, it is usually someone else who has to pay the wager. The recent experience in the general library field, in which in one year calamitous cries of manpower crisis were being raised, to be followed in the next year by articles on the

"death of the manpower shortage" with people pictured selling apples (19), should probably deter any further attempt to make superficial manpower predictions. It is, nevertheless, necessary to project manpower requirements to the best of our ability in order to make informed and effective decisions about future supply of personnel and their most appropriate educational preparation.

Manpower projections are difficult, because there are so many variables to consider and because fallacies tend to creep into the picture. One such fallacy is that budgeted vacancies are sometimes reported as positive indicators of shortage, frequently without any effort to correlate these data with the number of available applicants in the manpower pool. The primary fallacy, however, is that of equating "demand," actual expression of willingness to hire someone to fill a position, with "need," the measure of requirements against stated or unstated criteria to get the job done, as Rashi Fein has pointed out so well in his review of studies of physician shortages (20).

Shortage in this study connotes an assessment of shortage in the sense that employers have expressed a need for library personnel, are prepared to employ them, and then find that there are no qualified people available to fill positions. This economic conception of shortage, however, is not adequate for the projection of manpower needs and for the development of adequate educational programs. It does not take into account the existence of health related institutions and programs with no libraries. It does not reflect the needs of libraries with inadequate personnel. It does not respond to the library and information needs of health sciences library users who are not adequately supplied with library services. A more meaningful estimation of manpower needs should be based on these criteria rather than on demand, which is dependent on the economic ability to meet these needs. It is a responsibility of the profession to help society order its economic priorities, as they say, in a manner more consistent with these objectives. This, of course, requires the critical examination and careful statement of library goals. Manpower shortages or gaps in this sense represent the difference between manpower needs derived from specified library service goals and actual or projected manpower supply. This type of shortage prevents the ac-

accomplishment of desired objectives and makes achievement fall short of aspirations. At the present time, with respect to the compiled data relating to health sciences library manpower, it is possible only to specify manpower projections in relation to assumptions concerning library services.

Another significant point is that health sciences library manpower requirements can be understood only with due regard to the current and projected demand placed by users in a number of institutional settings. The provision of health care, and all that this implies, defines the context within which health sciences library manpower requirements must be considered. These requirements relate both to the present universe of health-related institutions and programs and to the projected growth of the health sciences sector. Manpower requirements in the medical and health services are expected to increase 45% between 1970 and 1975 (from 3.7 million people to about 5.35 million people). Of particular importance in connection with the growth of health manpower in general is the expansion of educational programs, since there can be little doubt that it is these programs in particular which will generate a demand for library services. Data for 1965 indicate 4,352 educational programs at all levels. Although most of these programs are in the 7,000 hospitals in the United States, an increasing number are to be found in junior or community colleges. The American Association of Junior Colleges has reported programs in forty health occupations. The development and expansion of education programs has been strongly influenced by the Allied Health Professional Personnel Training Act of 1966 and by other federal legislation. These projected increases have been supported by data. Two notable examples are the increase of approved educational programs in cytotechnology from 77 in 1962/3 to 118 in 1969/70, an increase of 53%, and, even more dramatically, the increase in approved programs for inhalation therapy, a relatively new paramedical specialty, from seven programs in 1963/64 to fifty-six in 1969/70, an increase of 700%.

One of the simplest methods of projecting manpower needs against this anticipated growth of a service population is one which has found wide currency in physician manpower studies. That is to accept current levels of manpower

support as reflecting actual demand and to project them against the anticipated increases in such related variables as population growth and growth in the number of related programs and institutions. For example, if the average size of the staff of a medical center library is twelve, of which six are professional and six nonprofessional, then obviously an addition of twenty new centers by 1975 should create a demand for 120 new professional positions and 120 new nonprofessional positions, in addition, of course, to those lost through attrition over the same period. A recent report on medical education in the United States indicates that there are twenty-one medical schools in development in the United States and three in Canada. Enrollments in first year classes in medical schools in the United States are expected to increase from 10,401 students in 1969/70 to 13,622 in 1974/75, an increase of over 30% (21). There are also six new dental schools in various stages of development, and dental graduates are expected to increase from 3,300 in 1965 to 4,200 in 1975, an increase of 31% (22). Projections of manpower needs can be made simply on the basis of increase in existing kinds of facilities, resources, and personnel in proportion to the increasing number of programs and institutions to be served. This approach does not take into consideration the possibility of developing more effective ways of making use of personnel, facilities, and resources, nor does it recognize the changing technological and social context in which these services may be offered in the future.

This is not the place to survey all of the technological and social changes in medical care and information services which appear to be imminent and which may in one degree or another influence the provision of information services to the health professions. Technological prognostications frequently have a way of failing to materialize precisely in the way they are visualized. The Sunday supplements after World War II, for instance, were full of predictions about the use of helicopters for individual transportation. In contrast, no one then seemed to have an inkling of the phenomenal impact that computers might have on our lives. An editor, commenting on the speed with which computers have developed in recent years, compares the calculators of twenty years ago on which it cost nearly \$300 to perform 10,000

ten-digit multiplications to the computer of ten years ago which could do the job for \$1.40 and to today's computers which can perform the same operation for one cent (23). Other writers indicate that we are on the verge of great cost reductions in the transmission of data. The first communications satellites launched in 1965 had a capacity of 240 circuits with an annual cost per circuit of \$20,000, while the latest has 6,000 circuits with an annual cost per circuit of \$700. Engineers, moreover, hope to improve these costs by a factor of ten before 1980 (24). It is difficult to assess the implications of these and other technological advances that are imminent or already upon us except by saying that they will contribute greatly toward creating an environment of change to which we can only respond by enlarging and expanding our continuing education programs.

The social context in which health sciences libraries will be operating is also changing significantly. Changes in the means of providing medical care from a system predominantly based on solo practitioners to one based on various kinds of groups and institutions, such as Health Maintenance Organization, will create a much greater need for libraries, which are in themselves cooperative enterprises based on the social action of people getting together in groups. Another factor is that some administrators are becoming impatient with the unsound economics of libraries operating as if they were uniquely independent and unrelated intellectually and administratively to the other libraries of the world. Libraries themselves will have to develop more and more cooperative procedures. It is the responsibility of the profession carefully and fairly to assess its current and anticipated manpower needs in the light of these and other changes. These needs will be converted into demand through the ability of the profession to validate these needs to society and through the kind of priorities which it helps society apply to conflicting demands and needs.

We have not attempted to analyze manpower "needs" in this sense, since such an analysis would constitute a research study in its own right. Needs in these terms can only be established with reference to standards, which in most cases do not exist, and with reference to many questions which have yet to be answered. Should all health-related institutions and programs have a library? To what extent is a library

necessary for the successful implementation of patient care, education, research, and other functions of the health sciences? What alternative types of information services may meet these needs more effectively? What types of libraries should be provided? Should the library be an integral part of the parent organization, or can adequate library services be provided by outside libraries? How can technology be harnessed for the improvement of library services? What types of manpower should be employed? At what level of professionalism should library personnel operate? Do all types of health-related institutions require the same kinds of personnel? How responsive should the planning of educational programs for library personnel be to the growth of general health manpower and health-related programs? What types of personnel can best make library services "relevant" to patient care? What skills, abilities, training are needed to enable personnel to operate most effectively in regional and network medical libraries? Where can training be best located to ensure adequate library experience? What are the priorities in terms of training—more educators, leaders, practitioners, technical or supporting personnel? To what extent is it desirable to train additional personnel as opposed to improving skills of present personnel?

GENERAL CONCLUSIONS

The data accumulated in the manpower study do not provide many answers to these questions. They do permit us, however, to make some general observations which may provide a basis for a more informed discussion of some of the issues:

(1) *There does not now appear to be a quantitative crisis in terms of manpower when measured only in terms of demand.* The identified shortage cannot be considered critical quantitatively. Budgeted, unfilled positions are limited in number and are amenable to short-term solutions such as higher salaries and expansion of educational facilities. What is much more serious is the unexpressed need for manpower on the part of health-related institutions and programs that lack libraries or which have libraries that are inadequately staffed. In the case of educational programs, this lack of libraries is grave and doubtless impairs the effectiveness of the educational effort. That this need is not expressed in economic terms may be due either to

the lack of qualified personnel, to an inability to pay the market price, or to a combination of both factors. One thing seems to be certain, and that is that, because of the high social priorities that are being placed on health, the number of health related institutions and programs will continue to grow and the need for library services will increase rather than diminish.

(2) *A qualitative crisis is more of a reality today.* The data indicate that most librarians in health related libraries (75%) have had little or no training in sciences related to health. Moreover, only 36% of the professionals and 5% of the nonprofessionals have had medical library training, even in the form of one introductory course. In view of the increasing complexity of library practice brought about by regional and national networks, automation, RMP activities, and RML operations, new problems have presented themselves. Analysis of library operations on a basis of cost-effectiveness is becoming more necessary. The essential goal of educational programs should be to develop analytical abilities and to upgrade the level of library practice to meet new challenges. In addition, if we are to be able to delegate increasing responsibility to information specialists to provide sophisticated information retrieval services, we must both attract more subject-oriented people to the profession and provide more opportunities in continuing education to make up whatever deficiencies may exist in this area.

(3) *One of the principal problems in the job market today appears to be poor distribution of library personnel.* Although there are not as many vacancies as existed a few years ago in the major metropolitan areas, it is clear that in the less populous areas of the United States job vacancies do exist. Ability to find professionally challenging positions in the future may depend to a higher degree on a willingness to explore areas of the country with which job applicants may not be familiar.

(4) *The medical librarian can no longer operate alone but must function as a member of a communications team.* The increasing influence of technology on library practice makes it necessary for medical librarians to examine their roles in relation to such paraprofessional specialties as systems analysis and audiovisual education. Media other than the printed page are becoming more and more important as information

sources and educational instruments. We no longer live in a predominantly print-oriented society. Yet many librarians seem to be reluctant to exploit these new media to achieve their service objectives. At a recent meeting, for instance, of the Association for Educational Communications and Technology (the old Department of Audiovisual Instruction of the National Education Association) only 5 percent of those attending were identified as librarians (25). Librarians must accept more responsibility in these areas and work closely with multimedia specialists.

(5) *The more effective utilization of existing manpower is an area which needs more exploration.* The data elicited in the survey suggest that many professional librarians are performing nonprofessional tasks and that, conversely, nonprofessional staff members are performing professional tasks. The Job Task Index yielded some significant evidence in this connection, but this is a matter we need to explore further collectively and in each of our libraries. The role of the library technician needs to be expanded, so that professional librarians can assume responsibilities more commensurate with their training. For smaller programs, such as those in smaller hospitals which cannot develop viable service programs on their own, we need to develop cooperative arrangements for services so that we can make the best use of available talent.

The production of a census of existing health sciences library manpower and the gathering of directory-type information relating to libraries in the health sciences will not by itself indicate the nature of future requirements for manpower or point the way to appropriate educational preparation. Manpower policy decisions and planning must be related to defined assumptions as to need. This study has not provided the basis for making these assumptions as to need, which must derive from a rigorous effort on our part to decide what our standards for service really are, but it has provided us with a data base against which some of these "assumptions as to need" can be measured. Just as important, it has fulfilled one of the purposes for which the study was conducted. It has strongly reinforced the need for our continuing education programs and has provided us with some suggestions for guiding their direction.

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RECOMMENDATIONS

It is not easy to arrive at recommendations from the data presented by the survey, although they do lead us toward the reinforcement of some strong existing hunches. It is clear that there is a great need for extended continuing education programs. No professional group can hope to maintain a level of competence and social relevance without such programs. The data do clearly demonstrate a need to orient some of the continuing education programs around the subject matter with which the literature of the health sciences is concerned. Regional differences in exposure to continuing education may be offset to some extent by the decentralization of these programs and by developing new kinds of formats; e.g., correspondence courses, programmed instruction involving the new media. These need not necessarily involve elaborate electronic gadgetry. Indeed, some good textbooks, programmed or otherwise, might fill some real needs in this area.

- (1) If health science librarianship is to fulfill its role on the health team, it must develop a cadre of well trained professionals who are capable of communicating with the other members of the team and of understanding their problems.
- (2) This means that education in health sciences librarianship must include exposure not only to problems in librarianship but also to health related problems of a substantive, administrative, and social nature.
- (3) In order to meet these requirements for adequate training programs, more explicit guidelines for program development and more effective criteria of evaluation will be needed.
- (4) Library management procedures should be improved by delegating appropriate library tasks to technical and subprofessional personnel so that professional personnel will be utilized as effectively as possible.
- (5) Developing programs for training library technicians should be supported, although the evidence is still not clear that these programs need to be specifically designed for health sciences library technicians.
- (6) Applicants for positions in libraries

should be encouraged to look to some of the less populous areas for job opportunities.

- (7) Continuing education programs in health sciences librarianship should be rationalized and expanded to cover a wider scope of library and health related problems so that the programs are truly continuous and truly accessible to all elements of the health sciences library community.

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