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ABSTRACT

This executive summary of a comprehensive study of health occupations education and employment in Illinois contains data on eighty-nine allied health and nursing occupations. Job definitions, educational requirements, licensing and certification, training programs, salary ranges, and job availability in these occupations are summarized in both narrative and tabular form. Tables included in the summary cover major occupational groups potentially employed in various settings, regional distribution of personnel and population percentages, per cent of personnel employed in various settings, average manpower supply ratings by region, average manpower supply ratings by employment setting, number of occupations in which 75 per cent or more of the personnel are credentialed, and number of occupations with advancement opportunities. Problems relating to salary, working conditions, education, and maldistribution of manpower are examined in a section on issues in health occupations. Research priorities and research and educational needs are covered in the concluding section. A bibliography of selected references is included. (MN)

Health Occupations in Illinois: Executive Summary

Illinois State Board of Education

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Product Abstract

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16. General Description (State the general objective and suggested method of use. Summarize the content and tell how it is organized. Continue on back of this sheet or on another sheet, if necessary.) The document summarizes a more comprehensive report, Health Occupations Education in Illinois: A Technical Report. Data presented in the reports were collected from existing sources and in a statewide survey of employers for use by educators and policy makers. Included are data on manpower supply, turnover rates, salaries, education, credentialing, advancement, and current issues for approximately 80 occupations. Findings are summarized by regional and employment setting data where appropriate.

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HEALTH OCCUPATIONS IN ILLINOIS: EXECUTIVE SUMMARY

The end of a decade and the beginning of a new one is often a time for reviewing the past and planning for the future. Hopefully, the planning is based upon an accurate assessment of past events and an evaluation of the current situation. Too often, however, the data base for this assessment is nonexistent or not easily accessible; planning must then be based upon the subjective opinions of the planner, which may or may not be realistic. The need for realistic planning in education, particularly vocational education, is essential to prepare students to meet future employment needs.

In 1979, the Southern Illinois University School of Medicine was awarded a funding agreement from the Illinois State Board of Education, Department of Adult, Vocational and Technical Education, to conduct a comprehensive study of health occupations education and employment in Illinois. The primary goal of the study was to address the following problem:

> In the state of Illinois there is not a comprehensive source of current, accurate, regional information regarding allied health occupations education and employment. This information either does not exist, or is not easily obtained by those people in this field who advise, plan, educate, or employ, or by those investigating career choices.

To accomplish this goal, the study collected the following data on 89 allied health and nursing occupations: job definitions, educational requirements, licensing/certification requirements, training programs, salary ranges, and job availability. The latter three informational areas were collected on a regional basis within the state. The data have been consolidated into three documents: a technical report to serve as a data base for planners, the present executive summary of the technical report, and a career guidebook for potential health occupations students.*

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*More detailed information on individual occupations is available in the following documents: Health Occupations in Illinois: A Technical Report (Springfield, Il: Illinois State Board of Education, 1980) and A Guide To Health Occupations in Illinois. (Springfield, Il: Illinois State Board of Education, 1981).

health occupations included in the study were those for which some specific formal training is offered but no more than a baccalaureate degree is required to be employed in that occupation in a health-care or health-related setting. Health education occupations and public health occupations were not included. Job titles and definitions for occupations meeting the study's criteria were selected from the American Society of Allied Health Professions' glossary of titles, a study of new and emerging occupations in Illinois, and secondary level health occupations program guidelines.

Methodology

In order to facilitate the project goals, an interdisciplinary advisory committee was formed representing the various interests of such groups as state educational boards; employers; established health occupations consortia; vocational, technical and counseling educational groups; and information agencies. The advisory committee contributed advice and suggestions on survey content, career guide format, and types of information to be included in the technical report. In addition to serving as a content review group for materials produced by the project, the individual members were channels to other work in the area of health occupations.

A search for existing resources was undertaken early in the study and continued throughout the project. Traditional methods of library search, while producing some sources, were not entirely satisfactory because of the need for various types of information, the wide variety of occupations involved, and the amount of unpublished data. Initially, 132 national and state professional associations were contacted by letter to obtain information on occupations, education programs, credentialing, and manpower. Health Systems Agencies were contacted for any manpower information to which they might have access. A series of more than 100 contacts was undertaken in the form of personal and telephone interviews. Each contact was queried for the information available from that source, the issues facing allied health, and additional contacts that might prove useful.

The statewide survey of employers conducted in January 1980 collected information on seven major topics: employment, salaries, advancement, training, continuing education, the accuracy of position descriptions, and major issues. Sixteen types of allied health employers were identified as the target population. The occupations were categorized into 14 major occupational subdivisions. The occupational categories and employment settings related to each are presented in Figure 1. Twenty-two instruments were developed; the questions on each instrument were identical, but the occupations included were specific to the type of facility. Additionally, each instrument had space for employers to add other occupations that were new or emerging. Since various institutions use different titles for positions, a list of job definitions was included with the questionnaire to enhance the standardization of data. Following a pilot administration of the questionnaire, the instruments were revised and typeset into an eight-page booklet format.

Based on the Health Service Areas in Illinois, six sampling regions were defined. Within each region, sampling frames were developed for the 16 employer types. Samples for each of the 96 stratum were randomly selected using systematic sampling and generally a ten percent proportional allocation. The result was a sample of 454 institutions receiving a total of 1,021 questionnaires.

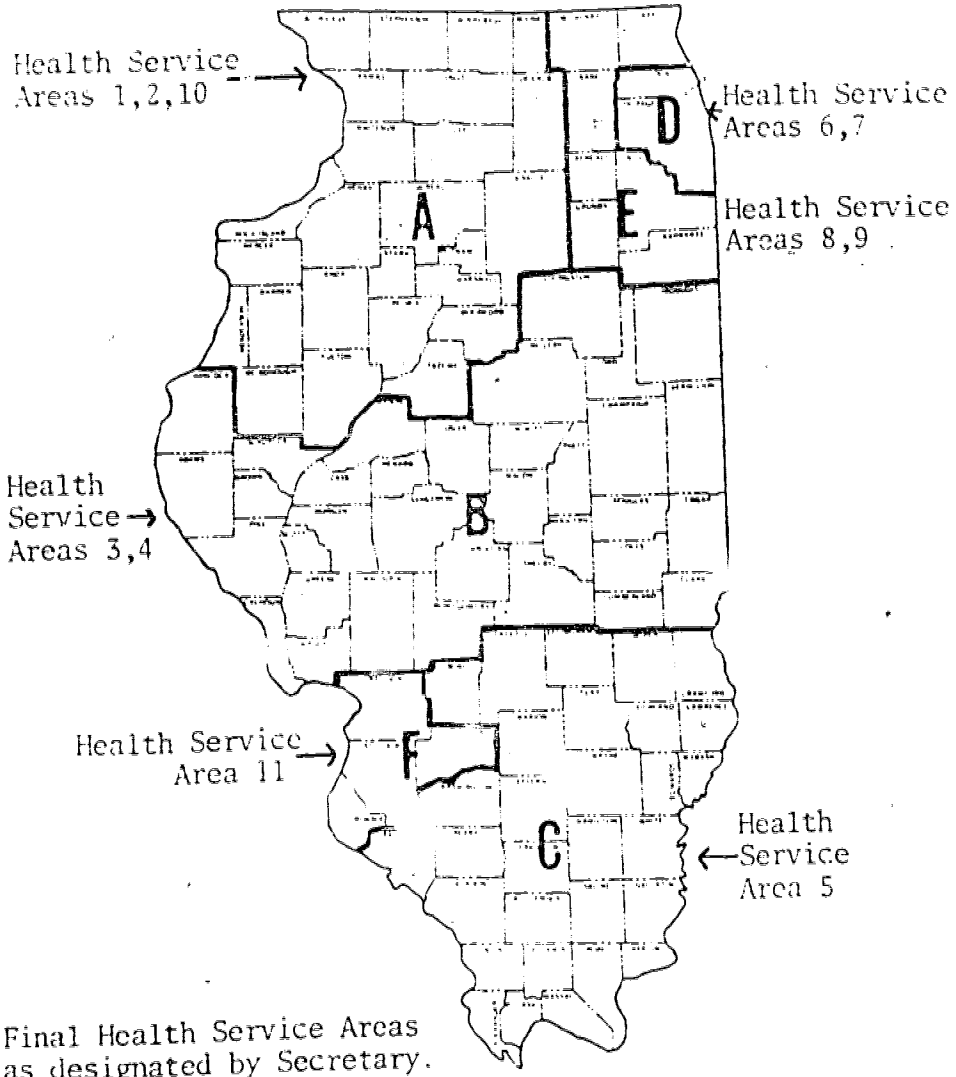
Several techniques were used to enhance survey response, including obtaining support for the study from three major health employer associations and rigorous follow-up of nonrespondents. The final response rate was 58% of the facilities, accounting for 60% of the questionnaires. Returns were higher than the average from hospitals and home health agencies; they were lowest from mental health centers. Regionally, the largest response rate was from the southern area of Illinois, while the lowest was from Cook and DuPage Counties. The regions used in the study are defined as [illegible] and shown in Figure 2:

Figure 1 - MAJOR OCCUPATIONAL GROUPS POTENTIALLY EMPLOYED IN VARIOUS EMPLOYMENT SETTINGS*

	Ambulance Services	Blood Banks	Dental Laboratories	Dental Offices	Home Health Agencies	Small (< 150 beds) Hospitals	Large (≥ 150 beds) Hospitals	Small (< 100 beds) Long Term Care	Large (≥ 100 beds) Long Term Care	Medical Clinics	Medical Laboratories	Small Mental Health Centers	Large Mental Health Centers	Pharmaceutical Companies	Rehabilitation Facilities	Research Centers
Clinical Laboratory Services		*				*	*			*	*			*		*
Dental Services												*	*			
Dietetic and Nutritional Services			*	*		*	*	*	*			*	*			
Emergency Services	*					*	*									
Health Administration and Support Services		*		*		*	*	*	*	*		*	*		*	*
Information and Communication Services						*	*	*	*	*		*	*	*		*
Medical Instrumentation and Machine Operation Services						*	*			*	*	*	*	*		
Mental and Social Services					*	*	*	*	*			*	*		*	
Nursing and Related Services		*			*	*	*	*	*	*		*	*		*	
Para-optometric Services										*						
Pharmacy Services						*	*			*		*	*			
Physician Extender/ Medicine-Related Services										*						
Rehabilitation Services						*	*	*	*	*		*	*		*	
Veterinary Services														*		*

*Following data collection, pharmaceutical companies were omitted from analyses and small and large mental health centers collapsed into one employment setting type.

Figure 2 - REGIONS USED IN THE STUDY*



Final Health Service Areas as designated by Secretary, DHEW, under P.L. 93-641, the National Health Planning and Resources Development Act of 1974.

*Collapsed from the eleven applicable Health Service areas in Illinois

Region A:	HSA 1, 2, 10(Illinois Portion)--Northwestern Illinois
Region B:	HSA 3, 4 -- Central Illinois
Region C:	HSA 5 -- Southern Illinois
Region D:	HSA 6, 7 -- Cook and DuPage Counties
Region E:	HSA 8, 9 -- Northwestern Illinois other than Region D
Region F:	HSA 11(Illinois Portion) -- St. Louis Metropolitan Area

Health Occupations Employment in Illinois

The study included collection of data on four topics that may be categorized as "employment" variables. The first of these, number of full- and part-time personnel, was collected primarily to be used as a reference point in interpreting other information obtained in the study. The other three topics were manpower supply, turnover rates, and salaries. Findings on these topics are summarized below.

Survey results indicate that more than 200,000 allied health (84,736) and nursing (119,048) personnel are employed in Illinois in the settings included in the study. Approximately three-fourths of these personnel are full-time employees and represent 89 occupations, 79 of which employ adequate numbers for analysis.

In general, the regional distribution of personnel is as expected, based upon population figures: Region A, 12%; Region B, 19%; Region C, 6%; Region D, 46%; Region E, 12%; and Region F, 4%. The only regions differing by more than one percentage point from the population distribution are Regions B and D; Region B has 7% more personnel than expected and Region D has 6% less (Figure 3). These deviations may be due to regional variation in the use of temporary or contracted personnel, or may result from the sampling method, which did not control for bed size in hospitals with more than 150 beds.

Of the employment settings surveyed, hospitals employ 56% and long term care facilities 25% of the personnel (Table 1). Large facilities account for more than two-thirds of the employees in both of these settings. Dental offices employ 7% and mental health centers 4% of the total. Each

Figure 3 - Regional Distribution of Personnel and Population Percentages

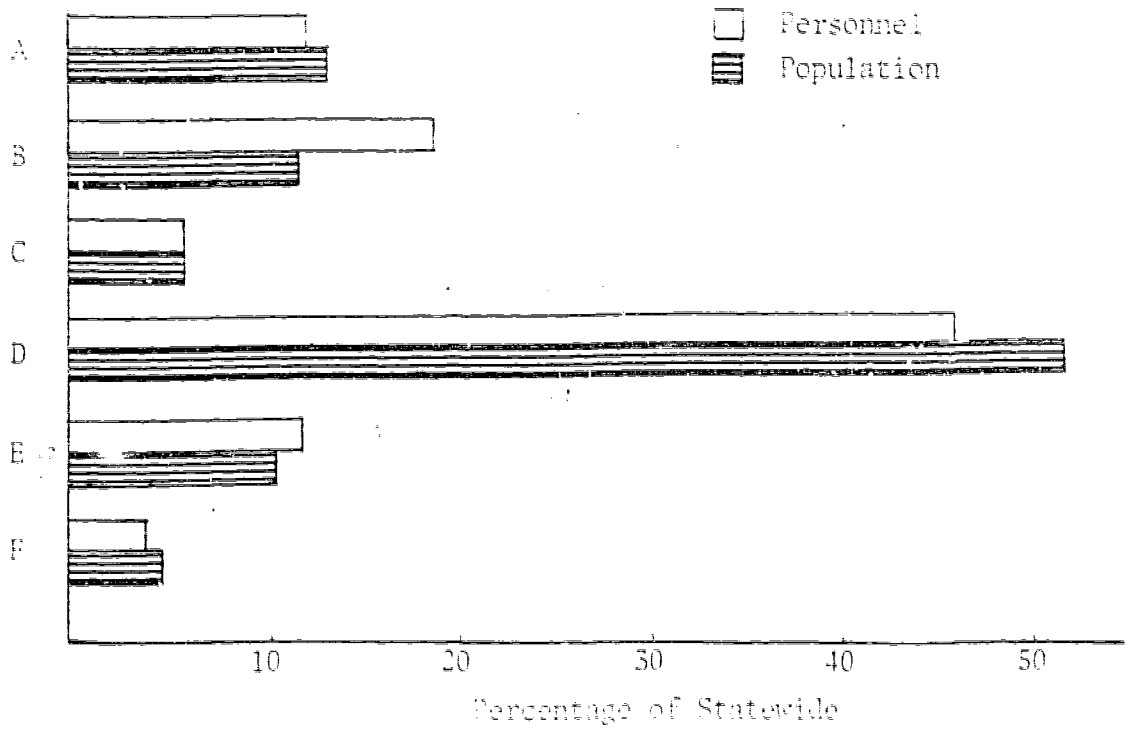


Table 1 - PERCENT OF PERSONNEL EMPLOYED IN VARIOUS SETTINGS

OCCUPATIONAL CATEGORIES	Ambulance Serv.	Blood Banks	Dental Labs.	Dental Offices	Home Health Agy.	Small Hospitals	Large Hospitals	Small Long Term	Large Long Term	Medical Clinics	Medical Labs.	Ment. Health Ctrs.	Rehab. Facilities	Research Ctrs.
Clinical Lab.		1				5	59			2	16	*		18
Dental			10	90										
Dietetic						8	45	13	31	*		3		
Emergency	90					6	4							
Health Admin.	*	*	1	31	*	3	48	3	3	7	*	4	*	
Information						20	49	6	6	2		6		*
Med. Instrm.						9	85			1	*	*		5
Mental/Social					19	1	11	1	1			65	3	
Nursing & Rel.	*				1	9	56	11	21	1		2	*	
Pharmacy						6	91				1	2		
Rehabilitation					*	6	27	14	38	1		3	11	
All Occupations	1	*	1	7	1	7	49	8	17	1	1	4	1	1

*Less than one percent

of the other settings surveyed account for 1% or less. Even though these latter settings employ a small proportion of the total number of personnel, some of them employ large proportions of personnel in particular occupational categories. For example, ambulance services employ 90% of the personnel from Emergency Services, home health agencies 19% from Mental and Social Services, medical clinics 12% from Information and Communications Services, rehabilitation facilities 11% from Rehabilitation Services, and research centers 18% from Clinical Laboratory Services.

Manpower supply results are based upon ratings provided by employers as evidenced by their own hiring experiences. The ratings are an indication of current, not projected, supply and do not reflect demand. Results indicate a moderate undersupply problem in 18 health occupations and a severe problem in 11 more. The latter occupations include emergency medical technician-paramedic, biomedical engineering technologist/technician, cardiopulmonary technician, radiation therapy technician, registered nurse, licensed practical nurse, respiratory therapist, psychiatric technician, medical radiation dosimetrist, orthotist/prosthetist, and orthotic/prosthetic assistant. Cursory examination of the statewide undersupplied occupations reveal no commonality other than job preparation requirements: most require certificates or associate degrees for entry. There appears to be no relationship between undersupply and turnover rates or salaries. Four occupations (human services/mental health technician, community health worker, medical office assistant, and radiologic aide) are reported by at least 10% of the employers as oversupplied. Of these occupations, community health worker is the most bountifully supplied.

There is wide regional variation in manpower supply, both within a category of occupations for a given region and across regions on a specific occupation (Table 2a). Although several occupations are considered severely undersupplied in each region, only three of the eleven occupations listed above are so reported in all six regions of the state: respiratory therapist, registered nurse, and licensed practical nurse.

Central and northern Illinois (except Chicago and DuPage Counties) report greater undersupply than the remainder of the state. These regions have

the highest overall ratings of undersupply as well as the largest number of occupations so rated. The southern and St. Louis areas report undersupply figures slightly lower than statewide averages.

Table 2a - AVERAGE MANPOWER SUPPLY RATINGS BY REGION*

OCCUPATIONAL CATEGORIES	Statewide	Region A	Region B	Region C	Region D	Region E	Region F
Clinical Lab.	2.2	2.4	2.4	2.4	2.1	2.5	2.3
Dental	2.3	2.2	2.5	2.0	2.2	2.6	2.0
Dietetic	2.2	2.5	2.3	2.2	2.2	2.1	2.1
Emergency	2.5	2.3	2.1	2.0	3.0	2.4	2.7
Health Admin.	2.2	2.1	2.2	2.0	2.3	2.4	2.0
Information	2.3	2.6	2.3	2.2	2.1	2.3	2.3
Med. Instrm	2.4	2.4	2.4	2.3	2.4	2.3	2.6
Mental/Social	2.1	2.2	2.0	2.0	2.1	2.3	2.2
Nursing & Rel.	2.5	2.5	2.6	2.4	2.5	2.7	2.4
Pharmacy	2.2	2.6	2.2	2.0	2.2	2.0	2.0
Rehabilitation	2.3	2.1	2.4	2.3	2.2	2.5	2.3
All Occupations	2.3	2.3	2.4	2.2	2.2	2.5	2.2

*On a rating scale with 1=oversupply, 2=adequate, and 3=undersupply.

Employers experiencing the greatest problem with undersupply are large hospitals, small long term care facilities, and ambulance services. Small hospitals and large long term care facilities also experience severe problems in two or more occupations (Table 2b).

There appears to be no relationship between manpower supply and annual turnover rates. Mean annual turnover ranges from zero to 41%, statewide. Occupational categories with low turnover include Dietetic and Nutritional Services (except dietary aide), Information and Communication Services, and Medical Instrumentation and Machine Operation Services (except cardiopulmonary technician). Additionally, low turnover is indicated for one oversupplied occupation, community health worker.

Table 2b - AVERAGE MANPOWER SUPPLY RATINGS BY EMPLOYMENT SETTINGS*

OCCUPATIONAL CATEGORIES	Ambulance Serv.	Blood Banks	Dental Labs.	Dental Offices	Home Health Agy.	Small Hospitals	Large Hospitals	Small Long Term	Large Long Term	Medical Clinics	Medical Labs.	Ment. Health Ctrs.	Rehab. Facilities	Research Ctrs.
Clinical Lab.		2.3				2.3	2.3			2.2	2.2			2.0
Dental			2.3	2.3								2.4		
Dietetic						2.2	2.1	2.4	2.2			2.1		
Emergency	2.6					2.1	2.6							
Health Admin.		2.0		2.2		1.9	2.0	2.1	2.2	2.0		2.2	2.1	
Information						2.3	2.2	2.6	2.3	2.6		2.1		2.0
Med. Instrm.						2.3	2.5			2.2		2.2		2.0
Mental/Social					2.3	1.7	2.2	1.7	2.3			2.2	2.4	
Nursing & Rel.		2.6			2.1	2.4	2.3	2.6	2.7	2.0		2.5	2.4	
Pharmacy						2.2	2.3					2.0		
Rehabilitation					2.9	2.2	2.3	2.3	2.2	2.3		2.3	2.3	
All Occupations	2.6	2.3	2.2	2.3	2.3	2.3	2.3	2.4	2.3	2.2	2.2	2.2	2.3	2.0

*On a rating scale with 1=oversupply, 2=adequate, and 3=undersupply.

Statewide turnover rates of 20% or more are observed in 15 occupations. (Table 3). These include three aide level occupations: laboratory assistant, dietary aide, and nurse aide/orderly. Eight are technician level: occupational and physical therapy assistants; both emergency technician occupations; and cardiopulmonary, human services/mental health, psychiatric, and recreational therapy technicians. Similar rates exist for medical/dental secretary, unit clerk, licensed practical nurse, and blood bank technologist.

Table 3 - A SUMMARY OF EMPLOYEE TURNOVER BY REGION*

AVERAGE TURNOVER RATE	Number of Health Occupations						
	Statewide	Region A	Region B	Region C	Region D	Region E	Region F
0 to 5%	21	34	25	41	17	22	32
6 to 10%	15	11	12	10	16	5	13
11 to 15%	16	9	5	1	7	8	5
16 to 20%	12	5	8	3	10	9	7
21 to 25%	11	4	9	4	3	7	0
26 to 30%	1	2	1	3	5	3	1
31% or more	3	3	5	0	9	9	4
TOTAL	79	68	65	62	67	63	62

*Rates based on employer estimate of annual turnover.

Regionally, southern Illinois has the lowest turnover rates. The northwestern Illinois and St. Louis metropolitan areas also report lower turnover in most occupations. Northeastern Illinois has the highest regional turnover.

The greatest turnover rates are from the employment settings primarily involved with direct patient care: large hospitals and both large and small long term care facilities. In these facilities, the highest turnover is in aide and assistant level occupations; several of the technologist classifications also are involved. The nursing field is prominent in the turnover figures at all facilities employing substantial proportions of these personnel.

It is recognized that the salary data collected in the survey will quickly be out of date, especially in the current inflationary economy. However, it is expected that the general relationships and patterns will not change substantially, even though actual salary figures themselves may do so.

Median annual salaries in the health occupations range statewide from $6,300 to $15,100 at entry and from $8,700 to $29,800 at the top levels.

The highest salaries, as expected, are in the administration occupations and in the majority of those requiring a baccalaureate degree. (Supervisory personnel salaries may not have been included in the top salary data reported by employers.) The lowest salaries are in the occupations requiring less educational preparation, notably aides and assistants. There is considerable variation by region of the state; however, the regional variation in health occupation salaries is similar to the normally occurring regional variation in per capita income.

When salary data are examined by the various employment settings, it is seen that large hospitals generally report the highest figures (Table 4). Research centers also indicate higher salaries than the statewide medians for several of the technologist positions in the Clinical Laboratory Services category. Large long term care facilities report higher wages for some of the Dietetic and Nutritional Services occupations.

Table 4 - EMPLOYEE ENTRY LEVEL SALARIES BY EMPLOYMENT SETTING

MEDIAN ANNUAL ENTRY-LEVEL SALARIES	Number of Health Occupations													
	Ambulance Serv.	Blood Banks	Dental Labs.	Dental Offices	Home Health Agy.	Small Hospitals	Large Hospitals	Small Long Term	Large Long Term	Medical Clinics	Medical Labs.	Ment. Health Ctrs.	Rehab. Facilities	Research Ctrs.
Less than $7000			1	2		1		7	5	1				
$7000 to $8900				1	2	6	12	2	6	5		2	2	
$9000 to $10,900	1					2	14	3	3		4	2		1
$11,000 to $12,900	1			1		3	10	2			2	3	2	2
$13,000 to $14,900		1			1		11				1	1	1	1
$15,000 to $16,900						1	4		2			1		3
$17,000 or more							2					1		

The reported values for manpower supply, turnover, and salaries demonstrate the difficulty involved in making general statements about "allied health and nursing." Results of the statewide survey indicate large variation between occupations, between regions of the state, and between employment settings for all of these variables. However, some very general impressions emerge. 1) Based upon the hiring experience of employers, currently there are manpower shortages in more than 30% of the occupations studied. Shortages differ from one region of the state to another. Overall, there is minimal oversupply, based upon the employer ratings. Due to the present economy, there was a reluctance on the part of the employers to predict increases or decreases in future manpower demands. However, projections from the Bureau of Labor indicate there will be growth in many health occupations in the next few years. If this occurs, shortages will, no doubt, continue to exist and will probably become even more severe than those reported at the present time. 2) As expected, turnover rates are lower in those occupations that require more education and receive higher salaries. Nursing is an exception to this trend. 3) Salaries for many health occupations are low. This issue was the one most frequently mentioned by survey respondents. It may grow more difficult to attract and retain people in health occupations if the salaries do not become more competitive. 4) The pressing concern of employers about these three topics, manpower supply, turnover, and salaries, indicate a need for some basic research into the relationships among these variables with the object of developing models to project future needs.

Entry-level Job Preparation and Credentialing

The processes by which personnel are prepared for an occupation and recognized as competent to perform their duties are important considerations in any field. The educational and credentialing processes are the objects of considerable attention in the health field. Information on job preparation--requirements, types of training, location of training--was collected from employers for each occupation. Individual occupation credentialing (certification, registration, and licensure) information

was compiled from other sources with emphasis on practices specific to Illinois. In addition, employers supplied data on the number of employees with formal credentials.

There is moderate consensus among employers with respect to the level of preparation required to enter the majority of health occupations: 50% or more agree on requirements for 50 of the occupations. Entry-level choices included high school diploma, on-the-job training, certificate, associate degree, baccalaureate degree, master's degree, or other. The responses do not vary significantly by region of the state or by employment setting.

Approximately one-third of the occupations may be entered with a high school diploma or on-the-job training. These occupations include the majority of the clerical, aide, and assistant titles. Generalizations regarding the educational level required for technicians is not possible: certificates, associate degrees, or a combination that might include high school or on-the-job training are required for different technician level occupations. The majority of the technologist occupations require a baccalaureate degree, as do several of the counselor/worker classifications in the Mental and Social Services category and the therapist positions in the Rehabilitation occupations. A master's degree is required by 20% or more of the employers for a few selected occupations in the Nutrition, Rehabilitation, and Mental and Social Services fields. Overall the results are generally consistent with expectations, including a growing tendency for some occupations which, in the past, required only on-the-job training or a high school diploma, to require formal training.

Fifty-six occupations were listed by employers as being staffed by persons who have been trained in another occupation. In the majority of cases, an employee with lower level training is working in a higher level occupation within the same category. However, there is some changing of occupational categories, especially by radiographers and personnel in the nursing occupations. The occupations drawing from the largest number of other occupations are blood bank technologist, EKG technician, pharmacy assistant, health services administrator, and rehabilitation

counselor.

Employers report that, of those personnel currently employed, 43% obtained some of their training on the job. Included are occupations in every category in the study. High school vocational programs, area vocational centers, and technical institutes trained another 9% of the personnel. Twenty-one percent were trained in hospital-based programs, including many in the Clinical Laboratory, Medical Instrumentation and Machine Operation, Mental and Social, and Nursing and Related Services categories. Twelve percent were educated in two-year colleges and another 10% in four-year colleges or universities. Only 1% were trained in the military services.

With respect to the geographic location of training, employers indicate that many people find employment in the area in which they train. Overall, 66% of the people received their entry-level training in the Health Service Area in which they are presently working. Another 16% were trained elsewhere in Illinois. Training was obtain outside of Illinois by 12% of those now employed in the state. Review of individual occupations reveal that a majority of personnel were trained in the local Health Service Area in two-thirds of the occupations. The majority of chemistry technologists, alcohol/drug abuse specialists, occupational therapists, physical therapists, and corrective therapists were trained outside of Illinois.

A review of the literature shows a 57% increase in the number of Illinois college-based undergraduate programs in allied health in the three years following 1970. During the next six years, the increase was 94%. The types of occupations for which programs are available, however, has grown at a slower rate throughout the same time period, increasing from 23 program types in 1970-1971 to 51 in 1979-1980. The major increase in the number of programs and in the number of program types has been in the two-year colleges, reflecting the increased availability of federal monies to these institutions for planning and developing new educational programs and their willingness to respond to local needs.

A review of hospital-based programs in allied health in Illinois produces

fewer statistics. The number of American Medical Association accredited programs in Illinois hospitals increased between 1973-1974 and 1979-1980 by a percentage similar to that in colleges. Although current opinion indicates that the number of non-accredited hospital-based programs is decreasing, this cannot be validated because of the lack of existing data. Similar problems exist with data on high school vocational programs in allied health. Enrollment figures from high schools indicate that the number of students has almost doubled in the same time period.

Data on credentialing indicate that eight of the occupations studied are licensed through the Illinois Department of Registration and Education; four are registered with the Illinois Department of Public Health. Certification, on the other hand, is a voluntary process through national professional associations. Certification is available for many occupations in allied health.

Employers report at least 75% of the personnel in 25 occupations, and between 50% and 75% in an additional 16 occupations are certified or registered (Table 5). Although the term "licensure" was not used in the question, it is believed that employers included this type of credentialing when they responded. The occupations with the largest proportions of credentialed personnel, excluding aide level occupations, are in the Clinical Laboratory, Dietetic, Emergency, Nursing and Related, and Rehabilitation Services categories. There is some regional variation in the number of credentialed personnel. The southern region of Illinois has the lowest number of occupations with high percentages of credentialed personnel, while the northwestern portion of the state, as well as the two metropolitan areas of Chicago and St. Louis, report larger numbers of occupations.

In summary, study of education and credentialing in allied health occupations in Illinois leads to the following observations. 1) Many occupations in the allied health and nursing fields may be entered with a high school diploma and/or on-the-job training. There is a trend, however, for some employers to be requiring formal training prior to employment for persons in these occupations. 2) There is some evidence of movement between occupations, often within the same category. It is

not known whether this movement results from upgrading of skills, or is related to the issue of manpower supply wherein undersupplied occupations are being filled by persons from other occupations. 3) Complete, accurate, and current data do not exist on the number of allied health programs in hospitals and in high schools. The existing data, primarily from the two-year colleges, suggests that the number of persons entering allied health occupations has doubled in the last six years. 4) The entire process of credentialing in allied health occupations is complex and currently receiving attention from national associations and accrediting agencies. There is concern with the proliferation of occupations and the measurement processes inherent in credentialing.

Table 5 - NUMBER OF OCCUPATIONS IN WHICH SEVENTY-FIVE PERCENT OR MORE OF THE PERSONNEL ARE CREDENTIALED

OCCUPATIONAL CATEGORIES	Statewide	Region A	Region B	Region C	Region D	Region E	Region F
Clinical Lab	6	7	6	5	6	8	8
Dental	1	1	2	1	1	2	0
Dietetic	2	2	1	0	1	1	2
Emergency	2	2	2	1	2	2	2
Health Admin.	1	2	0	1	2	0	1
Information	2	4	3	0	1	2	2
Med. Instrm.	4	4	3	1	5	1	5
Mental/Social	1	2	2	3	2	2	3
Nursing & Rel.	2	3	3	3	3	3	4
Pharmacy	0	0	0	0	0	0	1
Rehabilitation	5	6	3	3	8	7	3
All Occupations	26	33	25	18	31	28	31

Advancement Opportunities and Continuing Education

Two topics frequently mentioned as areas of concern in health occupations are the opportunities for advancement and continuing education. The overall assessment by employers in the survey indicates poor to adequate opportunities for job advancement in most of the occupations studied (Table 6). A majority of employers state that opportunities for advancement to supervisory positions are good in only 14 of the occupations. Opportunities are even less for non-supervisory advancement within the same occupation and to other occupations. Even though overall advancement opportunities are not considered good, when asked if continuing education or advanced training is necessary for advancement, a majority of employers answered affirmatively for 55 of the occupations. Thus, training beyond entry-level preparation may not guarantee advancement in the field, but opportunities without the additional training are probably slight.

Table 6 - NUMBER OF OCCUPATIONS WITH ADVANCEMENT OPPORTUNITIES

OCCUPATIONAL CATEGORIES	Opportunities for Advancement to: Supervisory Position		Non-Supervisory Position		Another Occupation		Continuing Education Required for Advancement
	Good	Poor	Good	Poor	Good	Poor	
Clinical Lab.	0	1	0	4	0	7	6
Dental	0	1	0	1	0	2	1
Dietetic	4	0	1	0	0	1	5
Emergency	0	1	0	0	1	1	2
Health Admin.	2	1	1	2	0	0	2
Information	1	2	1	1	3	1	6
Med. Instrm.	1	5	4	1	1	7	7
Mental/Social	1	4	2	3	1	3	8
Nursing & Rel.	1	5	0	3	0	1	5
Pharmacy	0	1	0	1	0	0	0
Rehabilitation	4	6	2	7	2	6	13
All Occupations	14	27	11	23	8	29	55

Continuing education is a general requirement in 46 occupations, according to a majority of employers. For some titles, especially those requiring two or more years of preparation, large proportions (60% to 90%) of the employers require continuing education. A majority of employers offer continuing education for their employees in 55 occupations. Over 50% of the employers offer it for all of the occupations in Emergency, Medical Instrumentation and Machine Operation, Mental and Social, and Nursing and Related Services.

Overall, approximately 40% of the allied health and nursing personnel received some form of continuing education in 1979. There is a great deal of variation between occupations, however. The trend is for smaller proportions of personnel in aide and assistant level positions to receive continuing education.

Issues in Health Occupations

Within all fields there are issues of concern; allied health and nursing are no exceptions. The present study sought to identify these issues, as seen from the perspective of allied health employers. Specifically, employers were asked "What do you think are the three most important issues affecting allied health personnel?" Many employers responded in only one or two words while others provided extensive answers. A total of 1,087 responses were received; approximately 1000 are applicable to the general field of allied health, while the remainder are occupation specific.

Comments grouped under the general topic of working conditions occur the most frequently. Of these issues, concern with salary levels is reported more often than any other topic. Salary data from the survey lend support to this concern. Fifty-one percent of the occupations in the study have median starting salaries of less than $11,000 per year. If administrator salaries are excluded, the highest median top salary is $21,700. Other issues pertaining to working conditions are hours, unionization, job security, changing job demands, and the inability of an employee to use fully his or her training. Several other issues may, in part, result

from the above mentioned concerns: job satisfaction, stress, attitudes, and "burnout."

A large number of employers listed issues related to education. The most frequently mentioned is the lack of regional programs and the inability of students to gain acceptance into those that do exist. Examination of data reported on the geographical location of health occupations training reveals that most of the aide and technician level positions are held by people who received training in the region in which they are working. Many of these people received training on the job. A large number of individuals in the technologist/therapist occupations, however, received training in other regions of the state or outside of Illinois. For example, 47% of the corrective therapists and 68% of the physical therapists were trained in another state.

The quality of the education received by persons in allied health was also questioned by the employers in the survey. There is also reported lack of communication between educational institutions and service agencies or facilities. This results in unrealistic training: in many instances, students are either overtrained or undertrained for the actual duties they perform, according to employers.

Forty percent of the education issues are concerned with continuing education. While most employers simply listed "continuing education" or "continuing education needs," others specified concerns regarding the cost and the availability at convenient times for employees.

Another broad category of issues relates to manpower. Maldistribution of manpower is a major concern, with several employers noting the difficulty of recruiting qualified personnel in rural areas of the state. Employer ratings of manpower supply support their concerns with this problem. Statewide, mean supply ratings indicate that 29 occupations are currently moderately-to-severely undersupplied. Along with manpower, the issue of turnover in various occupations is a concern. Twenty percent of the occupations have turnover rates in excess of 20%. These manpower issues are, of course, related to the salary issues discussed earlier.

Conclusion

A high priority for future research appears to be the development of an adequate model to determine the type of manpower data that are needed in the health occupations. It is not sufficient to use the number of students being trained and the number of vacancies reported to assess health manpower. The inadequacies of the two measurements include: 1) the number of students being trained does not reflect career interruptions and geographic relocations; 2) vacancy figures are often incomplete and are not adequately refined to reflect demand. For example, demand in a given occupation, such as licensed practical nurse, is affected by the supply in closely related occupations, such as registered nurse. Thus, other variables must be examined in order to develop a predictive model that will be useful in determining local as well as statewide needs.

At the current time, in order to justify a new educational program, the applicant institution must demonstrate a need for it. There is little consistency in the methodology used by institutions, and the "demonstrated need" is frequently open to various biases. This is not the fault of the educational institutions, but is primarily because of the lack of good models and adequate data bases upon which to build strong long range plans for growth and expansion.

There is also a need for research to define further the relationships between the many issues and concerns addressed in the present study. It seems plausible, for example, that advancement opportunities might be related to such factors as turnover rates, manpower supply, and job satisfaction, as well as to numerous educational factors, at both the pre-service and continuing education levels.

Another concern, regardless of the relationships among the above issues, is the cost of continuing education and who should bear that cost. This concern was noted by employers in the survey, who, if required to pay for continuing education, will ultimately have to increase the cost of patient care.

In the present period of predicted decline in student enrollments, a practical consideration of educational institutions is the role they play in providing continuing education, refresher courses for persons reentering the job market, and short-term retraining programs for persons transferring from one occupation to another. It is reasonable to assume that it is advantageous to both employers and educational institutions to develop cooperative efforts in these areas.

The continued planning of articulation programs that permit students to progress smoothly from one level of training to another is important. The entry-level programs, especially at the assistant and technician levels, need to be examined to assure that they provide a broad base for flexibility in the future growth and development of the employee.

It is hoped that the results of the present study will serve as a data base for allied health and nursing and will have wide-ranging implications for educators and employers. Perhaps the major implication of the study is a need for more cooperation between these two groups. While some issues may appear on the surface to be a problem only for employers or only for educators, the ramifications of the issues affect both groups. For example, job satisfaction may result from training as well as from working conditions. Educators need to examine programs to determine if they provide both the skills and the flexibility necessary for rewarding careers. Employers need to be sure they are effectively and efficiently utilizing the training of their employees.

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