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NURSING PERSONNEL EMPLOYMENT PATTERNS
IN IOWA'S HEALTH CARE FACILITIES

Dale F. Petersen¹

Beverly Richards

Abstract: The purpose of this study was to determine the current and projected staffing patterns for nursing personnel in Iowa's hospitals and long term care facilities. Questionnaires were mailed to all hospitals and long term care facilities licensed in Iowa. Current information about employment trends for licensed practical nurses, registered nurses, nurse aides/orderlies, and medication aides was obtained to serve as a basis for planning and to provide current information to counselors, potential students, and the public. The findings of this study are in agreement with the Report of the 1986 National Hospital Nursing Supply Survey as well as other recent reports that reveal our health care delivery system again faces a shortage of nursing personnel.

The health care industry will continue to be one of the nation's largest employers. Nationally, medical practice patterns, federal prospective

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payment policies, private health insurance restrictions and changing technology have affected utilization of nurses in health care settings. Cost containment, likewise, will continue to be a factor influencing changes in employment patterns and studies will continue to find the most cost effective utilization of personnel to deliver quality health care (American Hospital Association, 1987).

In Iowa during the early to mid-1980's, there was an apparent reduction in the hiring of nurses and, in some cases, layoffs of currently employed nurses. This was most evident in the state's hospitals which were experiencing a downward trend in the daily census of patients. More recently, this employment trend for nurses has been reversing itself with a renewed demand for both registered and practical nurses. This reverse in trend can be observed, in part, by the increased number of employment advertisements for nurses.

Since 1965, the American Nurses Association (ANA) and its state constituents have been attempting to revise the structure of nursing (excluding licensed practical nurses and diploma prepared registered nurses) and nursing education in the United States. The ANA has proposed two types of nursing education programs and **licensure**: (a) the baccalaureate of science in nursing degree (BSN) for the professional nurse, and (b) the associate degree in nursing (ADN) for the associate nurse. These developments with their media coverage have led to confusion about what kinds of future nurses will be employed and in what kinds of institutions (Hillmer-Pierson, 1987).

Since 1961, Iowa's area community colleges and area vocational technical colleges have provided educational programs that prepare graduates to write

the National Council of State Boards of Nursing Examination (NCLEX) for both licensed practical nursing (LPN) and registered nursing (RN). The extent of involvement and commitment of these area colleges to prepare quality nursing personnel can be evidenced, in part, by the substantial proportions of both registered and practical nurses they prepare each year. During the calendar year 1986 (including February and July examination administrations) graduates of the area colleges associate degree nursing programs comprised approximately 50% of the registered nurses licensed in Iowa. Approximately 26% were prepared by baccalaureate degree programs and 24% by hospital based diploma programs. All of Iowa's licensed practical nursing programs are administered in area colleges with the exception of one that is administered by an independent community school district.

Most nursing programs in Iowa's area colleges have the career ladder option from LPN to ADN. This option allows each student to choose the point of entry into a nursing career that is compatible with the student's intellectual and financial abilities, and personal life style. Through the career ladder program, individuals also can change their career goals while progressing in their academic preparation or, in the case of LPNs, return to complete their ADN education. Because of this extensive involvement and a commitment to prepare quality nurses, the area colleges are interested particularly in determining employment needs and analyzing trends as a basis for planning and curriculum revision.

Purpose

The general purpose of this study was to determine current employment and projected hiring plans for nursing personnel in Iowa's hospitals and long term care facilities. Specific purposes were to determine:

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1. Whether LPNs would continue to be employed by major health care facilities in Iowa,
2. What type of health care facilities would employ LPNs, and
3. Whether changes in the role of LPNs or the areas of assignment require corresponding changes in curriculum.

Personnel in the Program in Health Occupations Education in cooperation with the Area School and Career Education Bureau of the Iowa Department of Education and personnel from area colleges and the Nursing Council of the Iowa Vocational Association, undertook the current study in an attempt to obtain data relevant to the foregoing specific purposes and obtain current information about employment trends for other personnel: registered nurses, nursing assistants/aides, and medication aides. Such data could provide a basis for planning as well as information for guidance counselors, potential students, and the public.

Methodology

Questionnaire

Survey questions were written initially by a committee from the Nursing Council representing nursing education programs in Iowa area colleges and staff from the Program in Health Occupations Education. These questions and appropriate content areas were developed further into questionnaire format by Program staff.

The questionnaire, with a cover letter, was distributed to members of the original committee who conducted a pilot study with a limited number of hospitals and long term health care facilities in their respective areas. Comments from those completing the questionnaires were used to revise the instrument for clarity. After the questionnaire and cover letter were

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revised, the final forms were submitted to the Iowa Hospital Association, the Iowa Health Care Association, and the Iowa Association of Homes for the Aging for their review and endorsement. All three organizations endorsed the study and encouraged their members to respond to the questionnaire.

Data Collection

All licensed hospitals and long term care facilities in Iowa were surveyed. Personnel in the Program in Health Occupations Education agreed to assume responsibility for mailing and following up questionnaires to hospitals. Personnel in the area colleges agreed to do the same for long term health care facilities in their respective geographical areas. Initial questionnaires and cover letters were mailed in late April and May of 1986 and a second questionnaire was mailed 2 to 4 weeks later to those not responding to the initial request. All questionnaires received from long term care facilities by the area colleges were mailed to the Program in Health Occupations Education for processing and analysis.

One area college, in the process of a district-wide study that included similar survey questions, elected not to duplicate efforts but to share data appropriate to the needs of this study. Hospitals in that district were surveyed by personnel in the Program in Health Occupations Education.

Study Population and Responses

It was determined to include all Iowa licensed hospitals and long term care facilities rather than a representative sample. The publication titled Health Care Facilities in Iowa, January 1986, was used to determine categories of licensed health care facilities for the survey. The licensure categories included: (a) acute care hospitals (ACHs), (b) skilled care facilities (SCFs), (c) intermediate care facilities (ICFs), and (d)

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residential care facilities (RCFs). Licensure categories are not mutually exclusive in that individual health care institutions may hold licenses in more than one category. For example, a hospital also may hold a license as a skilled nursing facility or an intermediate care facility. Likewise, an intermediate care facility also may hold a license in residential care. Primary licensure as indicated by each respondent was used to determine the unduplicated breakdown provided in Table 1 with two modifications:

Table 1

Primary Licensure of Surveyed and Responding Facilities

Facility	Surveyed	Responses	Percent
Acute Care Hospitals (ACHs)	128	118	92
Skilled Nursing Facility (SNFs)	19	6	32
Intermediate Care Facility (ICFs)	404	292	72
Residential Care Facility (RCFs)	177	.52	29
County Care Facility (CCFs)	66	48	73
Special Purpose Hospital (SPHs)	7	5	.71
Totals	801	521	65

1. Health Care Facilities in Iowa lists 136 hospitals licensed in Iowa. Seven of these hospitals that are essentially special purpose facilities such as the state mental health hospitals and state hospital schools were grouped as a special purpose hospital category; one hospital indicated on its returned questionnaire that it had closed. This reduced the population of surveyed acute care hospitals to 128.

2. County Care facilities were separated from the residential care category and considered as an individual category. By using Iowa licensure as the criterion for inclusion of a facility in the survey, the Veterans Administration facilities in the state were omitted.

Processing the Data

Returned questionnaires were screened for completeness and to eliminate duplication. When all usable questionnaires had been entered into the computer system and verified by the data entry department, a second review was completed by project staff to correct for errors and inconsistencies. The Statistical Package for the Social Sciences (SPSS) was selected for analysis of data.

Data Analysis and Discussion

Representativeness of Responders

It was deemed desirable to project data from the responders to their respective population groups in order to portray a more accurate estimate of statewide employment needs for nursing personnel. High levels of return were received from four groups: acute care hospitals (92%), intermediate care facilities (72%), county care facilities (73%), and special purpose hospitals (71%). Two groups, skilled nursing facilities and residential care facilities were substantially lower: 32% and 29% respectively. It was decided to project the data provided by responders only in the four categories with high levels of return if it could be shown statistically that the responders in each category were representative of their respective populations. Responses from the two categories with lower rates of return would be added to the projections but only as reported by responders.

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This approach was selected for three reasons in addition to the lower rates of return in the **SNFs** and RCFS categories:

1. The skilled nursing category contained only six facilities.
2. The residential care category included a large number of small to medium size group homes for mentally retarded clients staffed typically with qualified personnel other than nurses.
3. **The** residential care category contained a number of small homes which basically provide shelter, nourishment, and a minimum of assistance with personal care (State regulations do not require staffing of nurses in mental retardation or residential facilities since clients, in these facilities, should not require nursing care).

Bed size of the facility was selected as an acceptable variable to compare response groups with their respective populations. Bed size was divided into three subgroups: small, **medium** and large (Table 2). To

Table 2

Number of Facilities and (Number of Returns) by Bed Size

Facility	Large	small	Medium	Large	Small	Medium
	0-49	50-99	200+	0-49	50-99	100+
ACHS	67 (67)	41 (35)	20 (16)			
SPHS	0 (0)	1 (1)	6 (4)			
ICFS				80 (45)	241 (189)	83 (58)
CCF S				31 (22)	23 (17)	12 (9)

test representativeness of the respondents, the statistical test chosen was the Chi Square Goodness of Fit Test, with results presented in Table 3.

Table 3

Observed and Expected Frequencies and Corresponding Goodness-of-Fit

Chi-Square Values

Facility	Bedsizes*			Row
	Small	Medium	Large	Chi-Square**
ACHS	67	35	16	
	61.766	37.797	8.438	0.9728
ICFS	45	189	59	
	57.822	174.188	59.990	4.1688
CCFS	22	17	9	
	22.546	16.727	8.727	0.0262
SPHS	0	1	4	
	0	0.714	4.286	0.1333

*See Table 2 for number of beds by facility

**Chi-Square for alpha of .10 at 2 degrees of freedom is 4.605

The observed and expected frequencies are not systematically different by the Chi-Square Test. Thus, survey results were projected in the four categories to their respective populations to achieve more representative statewide estimates.

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To project responses to the statewide population, the mean was determined for each subgroup, multiplied by the number of facilities in the subgroup and then all subgroups were added in each category to derive a statewide estimate. One further point is in order. ACHS had two institutions whose bed sizes were so much larger than the others in their size group that they distorted the mean. When projecting the hospital data, means were calculated **excluding** these two institutions. After projections were completed for that size group, raw data from these two institutions were added. Employment and need estimates derived through the above procedures should provide a better understanding of how many of each classification of nursing personnel will be needed by each category of health care facility in the near future. Basic assumptions underlying all projections hereinafter presented are that extrapolated totals from the 1986 sample will be stable through 1988 and that these totals serve as the best reference values for determining personnel estimates.

Analysis of Data

Employment of Registered Nurses

As shown in Table 4, 14,497 RNs were estimated to be employed in Iowa's licensed hospitals and **long** term care facilities. An average of 1,970 RNs were projected to be hired for each of the calendar years: 1986, 1987, and 1988. This represents about 13.6% of all registered nurses employed by the responding institutions. By far, the greatest demand for RNs was reported by ACHS where an average of 1,481 were estimated to be hired during each of the specified years. This figure compares favorably with a recent study of need for **RNs** by the American Hospital Association (American Organization of Nurse Executives, Report of the 1986 Hospital Nursing Supply

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Survey, 1986) which revealed that 13.6% of all budgeted RN full time equivalent positions were vacant during the week of December 1, 1986.

When the average estimated hirings of RNs for these years are broken down according to relative size, hospitals over 50 beds show the greatest need for RNs expecting to hire RNs equivalent to 13% of their current total RN work force; hospitals under 50 beds estimated a number of RNS equivalent to 9.7% (Tables which reflect bed size are available from the authors).

Table 4

Summary of All Facilities for Registered Nursing

	<u>Currently Employed</u>			<u>Estimated Hirings</u>		
	FT	PT	Total	1986	1987	1988
ACHS	6963	4765	11728	1462	1524	1457
ICFs	1110	1281	2391	418	400	505
CCFs	55	32	87	8	18	9
SNFS	35	20	55	7	11	7
RCFS	40	30	70	18	5	4
SPHS	148	18	166	<u>17</u>	<u>19</u>	<u>21</u>
Totals	8251	6146	14497	1930	1977	2003

ICFs projected hiring an average of 441 RNs in each of the years, 1986, 1987, and 1988. This is equivalent to 18.4% of their current RN work force. For ICFS under 50 beds, respondents estimated hirings equal to 20.5% of their current total RN work force while estimations for medium and large facilities were 17.5% and 18.8% respectively. In the other categories listed (CCFs, SNFs, RCFs, SPHS), facilities estimated hirings averaging 48 RNS for each specified year.

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There is recognition among nursing service personnel, personnel officers, and others, that our nation is again facing a nursing shortage (National League for Nursing, 1986). Admissions to, and graduations **from**, registered nurse education programs, with exception of the **two-year, associate** degree programs, have decreased. Information provided to the heads of nursing education programs on December 23, 1986 by the Iowa Board of Nursing shows that admissions of RNS have declined from 2,385 admissions in 1982-1983 to 1,940 admissions in 1986-1987. Graduation of RN candidates has declined from 1,700 in 1982-1983 to 1,528 in 1985-1986. At the same time, Table 4 shows an increase in the number of RNS estimated to be hired in the three specified years. These two counter trends ultimately will magnify the shortage situation making it more difficult to recruit and employ RNS.

Employment of Licensed Practical Nurses

All categories of licensed health care facilities reported employment of LPNs (Table 5). Totally, these facilities reported employment of 6,940 LPNs . Thirty-two percent were employed by ACHS but it is not known in what hospital areas these LPNs were assigned. All categories of facilities reported they would be hiring **LPNs** in each of the specified years 1986, 1987, and 1988. ACHS plan to employ an average of 114 **LPNs** each of the three years or approximately 5.1% of their current total LPN work force. When viewed as a percentage of current work force, **CCFs'** projected hiring plans were the highest, showing they plan to hire an average of 33 LPNs a year for the 3 specified years or an equivalent of 24% of their current total **LPN** work force.

Combined, hospitals and long term care facilities estimated they would hire an average of 782 LPNs in each of the three specified years, slightly

Table 5

Summary of All Facilities for Licensed Practical Nurses

	Currently Employed			Estimated Hirings		
	FT	PT	Total	1986	1987	1988
ACHS	1205	1046	2251	115	112	115
ICFS	1382	2938	4320	595	546	670
CCFS	81	56	137	29	46	25
SNF S	19	11	30	6	6	6
RCF S	50	53	103	24	16	14
SPHS	93	6	<u>99</u>	5	7	9
Totals	2830	4110	6940	774	773	839

more than 11% of their current LPN work force. On the average, 84.4% of LPNs estimated to be hired in each of the specified years will be hired by long term care facilities (all categories except ACHS and SPHS in Table 5). When the SPHS category (where conditions tend to be more chronic and care tends to be longer term) is included with long term care, the percentage increases to 85.7%. The balance will be employed by ACHS. When estimated hirings are considered as a percentage of their current work force, small and medium hospitals show a slightly greater tendency to employ LPNs, 6.7% and 6.5% respectively, than do large hospitals (3.7%). On the other hand, small and medium ICFs estimated hiring LPNs equal to an average of 21% of their current work force for each of the three specified years. Large ICFs estimated hirings equal to 9% of their LPN

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work force. A similar pattern was observed for the other long term facilities as well.

While all categories of surveyed facilities indicated plans to continue hiring LPNs in the future, it may become more difficult to do so. Material provided by the Iowa Board of Nursing revealed that admissions in practical nurse education programs declined from a high of 1,157 for the 1983-1984 school year to 714 during the 1985-1986 school year. Graduations fell from 670 in 1983-1984 to 364 in 1985-1986. Declining enrollments most likely result from inaccurate publicity about employment opportunities and proposed changes in nursing and nursing education. Unless there is a reversal in admissions to practical nurse education programs, there is likely to be increased difficulty recruiting and hiring LPNs for the state's major health care facilities, particularly those providing long term care. This, in turn, could impact seriously on the quality and cost of such care.

Comments provided by respondents regarding plans for changing staff-mix and change in areas where LPNs are assigned tend to indicate that while many hospitals will continue to hire and utilize LPNs in much the same way as they have in the past, many will reduce or discontinue assigning LPNs in acute care areas. LPNs will continue serving in long term care areas, including skilled nursing. Some facilities commented negatively on the restrictions being placed on LPN scope of practice by state agencies. Some hospitals indicated they would be employing LPNs in outpatient clinics, home health care, rehabilitation, and other units. One hospital estimated an increase in the number of LPNs on staff and a decrease in the number of nursing assistants. These comments seem to indicate that the generalization that hospitals would not be employing LPNs in the future

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is not accurate. Rather, it would appear that the numbers of LPNs hired by hospitals will be smaller and their service areas generally will be in less acute care.

Home Health Care

While home health care agencies were not a specific category for this study, questionnaires were sent to several by one area college. Two questionnaires were returned with questionnaires from long term facilities in that particular area. Since these home health care agencies were not included in the data analysis. Their responses, however, were analyzed separately. One home health agency associated with a hospital did not estimate hirings of LPNs in the three specified years. The other, an independent home health care agency, estimated hirings of 50 in 1986, 60 in 1987, and 70 in 1988. These figures represent what appears to be a growing employment field for LPNs. A separate study should examine employment patterns and trends in these agencies and other emerging service agencies.

Employment of Nurse Aides/Orderlies

Respondents reported over 16,000 nurse aides and orderlies were employed in Iowa's health care facilities with an average of 4,460 expected to be hired in each of the 3 specified years, 1986, 1987, and 1988. ICFs, by far, were the largest employer of nurse aides/orderlies for a total of approximately 12,000, and expected to hire over more than 80% of the 4,460 required for each of the specified years (see Table 6). In the past, there has been a large turnover of nurse aides/orderlies. That trend appears to be continuing as reflected in the estimated hirings for the three specified years. This information is important for secondary schools

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and area colleges which offer these programs. Since the largest employers are **ICFs**, these schools and colleges should continue offering the geriatric aide course approved by the Department of Health.

Table 6

Summary of All Facilities for Nurse Aide/Orderly

	<u>Currently Employed</u>			<u>Estimated Hirings</u>		
	FT	PT	Total	1986	1987	1988
ACHS	1474	1103	2577	422	441	447
ICFs	5761	6211	11972	3491	3730	3881
CCF S	619	164	783	97	81	81
SNF s	115	60	175	51	55	51
RCF s	277	164	441	99	96	94
SPHS	468	2	<u>470</u>	88	— 88	88
Totals	8714	7704	16418	4248	4491	4642

Employment of Medication Aides

ICFS were the largest employers of medication aides employing over 3,800 out of the total of 5,200 (Table 7). In the three specified years, respondents estimated hiring 393, 493, and 566 respectively in 1986, 1987, and 1988. This information is important for area colleges which offer the medication aide course approved by the Department of Education.

Table 7Summary of All Facilities for Medication Aide

	<u>Currently Employed</u>			<u>Estimated Hirings</u>		
	FT	PT	Total	1986	1987	1988
ACHS	15	50	65	20	28	36
ICFS	3241	658	3899	253	265	433
CCFS	325	119	444	86	79	68
SNF S	9	3	12			
RCFS	198	92	290	34	31	29
SPHS	490	1	491	0	0	0
Totals	4278	923	5201	393	403	566

Conclusions

RNs

Data provided by the survey reveal an increase of approximately 3.8% in the number of RNs estimated to be employed in the state's hospitals and long term care facilities from 1986 through 1988. This uptrend in estimated hirings is opposite the trend in admissions to and graduations from programs in Iowa that prepare RNs. Graduations from the state's RN programs have trended downward from 1,700 in 1982-83 to 1,528 or approximately 10%. Should these two apparent countertrends continue, the likely result will be increased difficulty in finding and employing RNs by the state's health care facilities, a concern already being expressed by many.

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Findings of another current study, the Report of the 1986 Hospital, Nursing Supply Survey, by the American Organization of Nurse Executives, tend to support this concern. That **study** reported that 49.3% of the hospitals in the West North Central Region, which includes Iowa, experienced difficulty (60-90 days) recruiting RNS for their medical-surgical units. The percentage grew to 53.2% experiencing difficulty when recruiting RNs for the intensive care and coronary care units were added.

LPNs

Data provided substantial evidence that LPN hirings will continue in Iowa's hospitals and long term care facilities, contrary to current attitudes and publicity. Essentially, the same trends regarding estimated hirings and graduations observed for RNs are apparent but more pronounced in the data for LPNs. The estimated hirings of **LPNs** increased from 774 in 1986 to 830 in 1988, approximately 7.2%. Graduations from programs that prepare practical nurses have declined from 670 in 1982-83 to 364 in 1985-86 or 45.7%. These figures may be misleading by including a proportion of students who may complete their RN preparation in an **ADN** program. As a **result**, potential LpNs **available** for employment on a **longer** term basis may number even less than 364.

Clearly, the greatest employment opportunities for LPNs (85%) will be in long term care, both in hospitals and in other types of long term care facilities. This finding has implication for curriculum planning in practical nurse education programs. New emerging types of health care facilities or services appear to offer additional employment opportunities for **LPNs**. Home health care agencies, in addition to satellite clinics

and other new services, could well represent employment opportunities for a substantial number of LPNs.

Nurse Aides/Orderlies

Nurse aides/orderlies continue to be the largest group of nursing care personnel employed by Iowa's hospitals and long term care facilities. This survey did not attempt to determine estimated hirings on the basis of replacement and expansion. However, the fact that more than 25% of the total work force is estimated to be hired in each of 1986, 1987, and 1988 could lead one to expect a rather high turnover ratio in this group of employees. This turnover rate suggests an ongoing need for preparation of this type of nursing personnel. Since more than 84% of nurse aides/orderlies are employed in long term care settings, employment for graduates of the 60 hour geriatric aide course offered in Iowa's area colleges and some secondary schools should persist for at least the near future.

Medication Aides

Demand is not as great for nurse aides/orderlies who also have completed the state approved medication course to become medication aides. Demand increased from 7.6% in 1986 to 10.9% in 1988 indicating plans to employ increasing numbers of medication aides, at least in the near future.

Recommendations

The following recommendations are suggested by the data analysis:

1. Iowa's area colleges should increase their marketing and recruiting efforts to encourage full enrollment of qualified nursing candidates in both their LPN and RN programs.
2. Information, regarding the outcome of this study and other similar current studies and literature, should be incorporated into existing career

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information systems and should be made available to high school guidance counselors who counsel young people in career planning.

3. Iowa's area colleges and secondary schools should continue to offer **both** the geriatric aide course and the medication aide course as long as the need persists.

4. Cooperative efforts should be expanded between the area colleges, the Department of Education, the state's hospitals and health care facilities and other related state agencies to develop short and long range goals for assuring an adequate supply of qualified health care personnel.

5. Curricula of LPN programs should be revised as necessary and appropriate to reflect a greater emphasis on care of geriatric patients.

6. A separate study of home health care agencies, satellite clinics and other new and emerging health care services should be undertaken to determine their staffing needs, particularly for LPNs.

7. The survey instrument and process should be refined and the survey should be repeated in two to three years to establish a better base of knowledge and trends regarding need for nurses and nursing personnel in the state.

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