Rural Versus Urban: Tennessee Health Administrators' Strategies On Recruitment And Retention For Radiography

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INTRODUCTION

As of December 2010, there were 14.5 million people unemployed across the nation, which equates to 9.4 percent of the population (U.S. Dept Labor Statistics, 2011). Despite the current economic downturn, the growth in healthcare related jobs is projected to continue. The National Advisory Committee on Rural Health and Human Services (2009) projected a 27% increase between 2006 to 2016 in the health care and social assistance sector for available jobs in non-metropolitan counties. The Advisory Committee’s report predicted a jump from 1,550,477 health care employees to 1,969,724 for these non-metropolitan areas. These projections included increases in the numbers of allied health professionals in numerous fields, such as: pharmacy technicians (32%), medical assistants (35.4%), dental assistants (29.2%), radiologic technologists and technicians (15.1%) and medical records and health information technicians (17.8%). According to the U.S. Bureau of Labor Statistics Statistics (2010) of the 20 fastest growing occupations in the economy, half are related to healthcare and employment among healthcare practitioners is expected to increase by 21 percent.

Healthcare is one of the fastest growing sectors in the economy, and represents a considerable expenditure of federal and state funds. While information regarding the reasons allied health professionals choose to leave their current positions, little is known about organizational policies impacting recruitment and retention practices of allied health professionals in Tennessee hospitals.

Understanding of this problem is vital to the prevention of a critical shortage of allied health professionals.

Tennessee’s demographics present unique challenges for its healthcare delivery system. The statewide population total in 2008 was over 6.2 million, the 16th most populous state in the United States and District of Columbia (United States Census Bureau, 2009). Of those 6.2 million residents, 1.6 million lived in a rural setting, ranking 15th in population living in a rural environment and 37th in percentage of individuals living in an urban environment with 63.6% (United States Census Bureau, 2002). The urban versus rural population impacts secondary health indicators such as availability and development of services offered in communities as well as availability of employment (University of South Carolina Institute for Public Service and Policy Research, 2005). As of 2007 Tennessee had 133 community hospitals with 77 in urban areas and 56 in rural settings. Of the 133, 22 were state and local government controlled, 61 were not-for-profit, and 50 were investor owned (American Hospital Association, 2009).

Because of the diverse healthcare settings in Tennessee, advances in technology, the aging population, and increased demands for healthcare there is a definite need and focused statewide interest in maintaining a large group of allied health professionals. Given the dynamic nature of the
employment environment and the allied health workforce there is a substantial need for further studies of allied health recruitment and retention.

LITERATURE REVIEW

NATIONAL RADIOLOGY TRENDS

As of November 2010 there were 636 accredited radiography programs in the United States. This number of accredited programs is down from 760 in 1984 and 680 in 1991. Projections by the Bureau of Labor Statistics (BLS) project a high growth rate and employment greater than average for radiologic personnel. The BLS estimated that in 2000 there were 167,000 technologists employed, in 2008 there were 214,700 technologists employed and projected that 251,000 technologists will be needed by 2018 or a 17% growth. Included in those numbers was a decline of new radiographers due to fewer graduates of accredited programs. “After growing from 2000 to 2006, the numbers of first-time examinees leveled off and then began to fall during the past 4 years (Reid, 2010, p. 89).

Baby boomers make up about 41% of all radiologic technologists (R.T.) and “the average age of the R.T. population continues to increase due in large part to the aging of the baby boomers” (Reid, 2010, p.89). “In 1991 the average age of the R.T. population was 37; in 2010 it had increased by 6 years to 43 years old” (Reid, 2010, p. 89). As the average age of the U.S. population increases, the need for health care services will grow.

Data from the ASRT (2001, 2006) suggests graduation rates will not satisfy the demand of professionals and normal attrition from the profession. The average age of radiographers is 40, one of the oldest among allied health professions, and current projections show a drastic increase in the need for radiologists as the current employees begin to retire.

TENNESSEE SUPPLY AND DEMAND

Given the diverse healthcare settings in Tennessee, advances in technology, the aging population, and increased demands for healthcare there is a need for an organized statewide effort focused on maintaining an adequate supply of allied health professionals. This need leads to address the question that, despite the rising healthcare costs, improved technology, and the managed care costs leading to reduced patient length of stay, why is there a shortage of allied health practitioners in Tennessee?

A 2004 statewide study of Tennessee led by Middle Tennessee State Tennessee University (MTSU) identified current levels and trends of available Radiography professionals within the state. A vacancy rate of 13% was listed for Tennessee radiographers with 306 vacant positions statewide. A worsening shortage is predicted for the state especially considering there were only 202 new candidates in 2002 to fill these vacant positions. Overall the occupational outlook in this allied health career is excellent for the state of Tennessee. The literature demonstrates that on a local, state, national, and international level there is a need for health professionals in urban settings and an emerging and perhaps more critical need in rural settings.

At the time of the MTSU study Tennessee had 11 radiography programs. Six of the programs offered an A.A.S. and two offered a B.S. The A.A.S. programs are located at Chattanooga State Technical Community College, Columbia State Community College, Volunteer State Community College, Jackson State Community College, Southwest Tennessee Community College, and Roane State Community College. The University of Tennessee Medical Center at Knoxville, the Metropolitan Nashville General Hospital, and Methodist Healthcare in Memphis offer a certificate. The Baptist College of Health Sciences in Memphis and East Tennessee State University offered the B.S. programs. Since the MTSU study, one proprietary program has been added in the state at South College in Knoxville.

There were 120 graduates in 1989 and 148 from 2001 to 2002 although these graduation rates are lower that other data acquired on new registrants. There was no growth in the number of students who sat for the ARRT exam for the three final years of the study from 2000-2002 and recent statistics show these numbers continue to drop with an expected continued growth of 2% expected until 2010 for technologists. Overall the consensus of the statewide MTSU study indicated the state is not educating a sufficient number of radiographers to fill current hospital vacancy rate data and state supply. National shortages continue despite a growing number of applicant and graduates. A phone-study of Tennessee indicated there were numerous funded faculty positions available for the field. Additionally two statewide B.S. programs in radiography may potentially fill faculty member or management positions for the field.

THEORIES CONCERNING RECRUITMENT AND
RETENTION
Conceptually, there is an abundance of theories that describe the degree to which employees are attracted to, retained in, and finally leave a place of occupation. These factors depend upon two interrelated aspects and are the issues which determine individual health workers’ decisions to accept a position and then stay in that position and, also, the strategies engaged by employers, administrators and the government to address these issues (Lehmann, Dieleman, & Martineau, 2008).

To understand the motivating factors of retention, initial factors of recruitment must be examined to determine what motivating factors are essential to prevent employee turnover. Several strategies have been employed for rural allied health recruitment and retention. Educational pipelines, targeting non-traditional students, and training students in rural areas with the future recruitment into the job market are several documented methods (Goetz & Debertin, 1996; Golden, 2007). Other methods for attracting health members to rural settings included the emphasis of technical and community colleges.

A considerable bulk of the allied health literature deals with recruiting and retaining allied health members to rural communities because of the need in many of these underserved areas, as opposed to other metropolitan areas. Rural America is experiencing an influx in the elderly population and is creating a larger demand for services in these areas (Economic Research Service, 2007). Retaining and recruiting allied health professionals in rural areas is a widely recognized problem. Rural areas are in need of more qualified professionals across a wide range of health and human services in order to provide appropriate services for their citizens (National Advisory Committee on Rural Health and Human Services, 2008).

STATEMENT OF THE PROBLEM
Despite vacancies in several professions, healthcare is one of the fastest growing sectors in the economy and represents a considerable expenditure of federal and state funds. There is information regarding the reasons allied health professionals choose to leave their current positions, but little is known about organizational policies impacting recruitment and retention practices of allied health professionals in Tennessee hospitals. Understanding of this problem is vital to the prevention of a critical shortage of allied health professionals. The purpose of this study was to determine radiology administrators’ views on allied health recruitment and retention in Tennessee. Further evaluation of rural versus urban areas was done to determine the impact and differences of the two environments with regard to recruitment and retention.

METHOD
RESEARCH DESIGN
This project investigated radiology administrator perceptions of recruitment and retention strategies of Tennessee hospitals and their relation to effectiveness in urban and rural settings.

The data required for this study were collected via quantitative methodologies and a survey questionnaire was developed to facilitate this investigation.

SURVEY INSTRUMENT
A comprehensive review of the literature did not yield an existing survey instrument that addressed the problem under investigation. As a result information was extracted from the literature review and was used to create a relevant questionnaire concerning recruitment, retention, and turnover components as its main foundation and focus.

INSTRUMENT VALIDITY
Content validity was of utmost importance during the process of creating the instrument. The main elements examined, recruitment and retention strategies, served as the framework for the questionnaire content. A thorough review of the literature served as the basis of the informed process of content development.

Practitioners in the field of health administration and a panel of allied health administrators aided in establishing content validity of the questionnaire. Suggestions from these professionals were considered, and the survey instrument was altered to incorporate their recommendations.

Additional comments regarding the questionnaire was collected using the Survey Assessment Tool. Suggested changes were then incorporated into the questionnaire. The survey instrument was divided into three parts which included a general overview and background section, recruitment strategies, and retention strategies.

DATA ANALYSIS
In this study, once the requisite number of completed surveys were obtained, the researcher processed the information using the Statistical Package for the Social
Science (SPSS) version 18.0. Comments of the respondents were reviewed and summarized.

Quantitative analysis included frequency counts and resulting distributions were compiled for each of the items found in the questionnaire. The frequency distributions were converted to percentages of the total responses to facilitate reporting. Results were calculated based upon the number of responses for each question. Questions were formatted in a Likert Response Format. A factor analysis was used to determine internal consistency and a Chronbach's Alpha was run. An ANOVA was used and if ANOVA found any influences were significantly different a Tukey Post Hoc Analysis was then performed to determine which were significantly greater. The level of confidence p<.05, and finally the Factor One Levene's test of equality was performed.

RESULTS
A total of 47 Tennessee radiology administrators responded which included 35 from urban areas and 12 from rural areas. This represented a response rate of 49% from the 96 administrators polled.

RECRUITMENT AND RETENTION
Radiology was unique from other tested professions because a majority of radiology administrators stated there wasn’t a retention problem (87.2%), that it wasn’t difficult to recruit new employees (76.5%), disagreed with the statement that there are current vacancies at their hospital (72.3%), and also disagreed with the statement that there is an increased demand for new employees (68.1%). Radiology administrators answered 80.8% that their hospital has not had to layoff any employees in the given economy. When asked if there was generally an influx or shortage of allied health professionals radiology administrators responded that they disagreed there was a shortage (70.2%) and agreed that there was generally an influx (63.9%). Administrators were asked if the geographic location aided in recruitment (52.1%) and retention (69.5%) and there was little deviation among urban and rural counterparts.

RECRUITMENT METHODS
The most effective recruitment methods were competitive benefits (84.7%) and competitive wage packets (83%). Over three fourths of radiology administrators agreed with the recruitment tactics of word-of-mouth (82.3%) and online and website marketing (82.6%). A topic generally agreed upon was in regard to efficacy of nearby universities and technical and community colleges. Administrators agreed that a co-op program with universities is effective (80.6%), there is an accessible community college nearby (94.1%), and targeting technical and community colleges is effective (79.4%).

RETENTION STRATEGIES
Effective retention strategies had the highest percentages of agreement among total radiology administrators. Job security (94.1%), interpersonal relationships (97.1%), employee decision making power (94.1%) departmental decision making power (82.4%), career ladder and career structure (72.7%), adequate orientation (91.1%), employees believing they are valued (94.2%), employee lifestyle (80.7%), job fit (97%), and job design (94.1%) were all significantly agreed to be effective retention strategies by radiologists. A statistic differing from other allied health professions was that a majority (64.8%) of radiology administrators disagreed that resources were unevenly distributed or limited at their hospital for total, urban, and rural respondents. Radiology administrators do not believe work intensity is too high (79.4%) and disagree that employees experience social isolation on the job (85.3%).

URBAN/RURAL DIFFERENCES
There were a few questions where there was a considerable urban versus rural difference. Overall there was no consensus either way regarding total responses when asked about the effectiveness of family relocation programs for new recruits. However there was a considerable urban versus rural difference. Overall 71.4% of rural radiology respondents said that it was ineffective and 0% indicated it was effective. This is compared to 46.4% of urban radiology respondents who stated relocation programs were effective and only 7.1% stated they were not effective.

Another recruitment tool where there were considerable differences between urban and rural respondents dealt with the effectiveness of recruiting new employees with newspapers. Urban respondents (57.1%) stated it was effective while a lower percentage of rural (30%) respondents stated that it was effective. This is compared to 46.4% of urban radiology respondents who stated relocation programs were effective and only 7.1% stated they were not effective.

Both urban and rural radiology administrators gave a similar
response when they were asked if there were an adequate number of opportunities for professional development. The urban (65.7%) versus rural (41.6%) difference occurred when administrators were asked if employees took advantage of the available professional development opportunities. This statement shows a 25% difference between urban and rural radiology professionals taking advantage of professional developmental opportunities.

When asked if employees are typically from a rural area there was a difference between urban responses (46.1%) and rural responses (85.7%). The fact that the rural response was almost double that of the urban response indicated that allied health professionals working in a rural setting are more likely from a rural area than their urban counterparts and that rural hospitals relied on local residents when filling open positions.

When radiology administrators were asked if high percentage of our employees experience burnout there was a difference among rural and urban respondents. Urban respondents disagreed greatly (74.1%) with the statement about employee burnout while rural respondents disagreed to a much lower extent (33.3%) and agreed to a much higher extent (50%) than their urban counterparts. The drastic difference among radiology administrators’ statements indicated a lower burnout rate for urban radiographers that rural radiographers.

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**Figure 1**

Table 1 Distribution of Responses to Items Related to Recruitment and Retention

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. There is a retention problem</td>
<td>46.8</td>
<td>40.4</td>
<td>4.6</td>
<td>4.6</td>
<td>2.1</td>
</tr>
<tr>
<td>2. There is a need for additional allied health professionals</td>
<td>10.6</td>
<td>34.0</td>
<td>12.8</td>
<td>30.2</td>
<td>6.4</td>
</tr>
<tr>
<td>3. It is difficult to recruit new allied health professionals</td>
<td>19.1</td>
<td>57.4</td>
<td>16.6</td>
<td>8.5</td>
<td>4.5</td>
</tr>
<tr>
<td>4. There are current vacancies for allied health staff</td>
<td>27.7</td>
<td>44.7</td>
<td>19.3</td>
<td>6.7</td>
<td>2.1</td>
</tr>
<tr>
<td>5. My hospital has had to lay off allied health employees</td>
<td>26.0</td>
<td>35.7</td>
<td>2.9</td>
<td>20.0</td>
<td>2.9</td>
</tr>
<tr>
<td>6. We have experienced an increased demand for allied health professionals</td>
<td>19.1</td>
<td>48.9</td>
<td>14.9</td>
<td>12.8</td>
<td>4.3</td>
</tr>
<tr>
<td>7. There is a general shortage of available allied health employees</td>
<td>20.0</td>
<td>45.7</td>
<td>20.0</td>
<td>11.4</td>
<td>2.9</td>
</tr>
<tr>
<td>8. There is a general influx of allied health professionals</td>
<td>0.0</td>
<td>17.0</td>
<td>19.1</td>
<td>31.4</td>
<td>12.8</td>
</tr>
<tr>
<td>9. The geographic location helps the hospital’s retention</td>
<td>0.0</td>
<td>13.0</td>
<td>17.4</td>
<td>47.8</td>
<td>31.7</td>
</tr>
<tr>
<td>10. The geographic location helps the hospital’s recruitment</td>
<td>0.0</td>
<td>14.7</td>
<td>20.6</td>
<td>44.1</td>
<td>30.6</td>
</tr>
<tr>
<td>11. Health professionals leave this hospital for same positions in the same geographical area</td>
<td>0.0</td>
<td>16.7</td>
<td>25.0</td>
<td>41.7</td>
<td>16.7</td>
</tr>
<tr>
<td>12. Health professionals leave for similar positions outside this geographical area</td>
<td>0.0</td>
<td>31.9</td>
<td>21.3</td>
<td>29.8</td>
<td>6.4</td>
</tr>
</tbody>
</table>

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**Figure 2**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Urban</th>
<th>Rural</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. Health professionals leave this hospital to pursue a new career path</td>
<td>4.3</td>
<td>44.7</td>
<td>35.5</td>
</tr>
<tr>
<td>Urban</td>
<td>0.0</td>
<td>42.9</td>
<td>19.7</td>
</tr>
<tr>
<td>Rural</td>
<td>10.7</td>
<td>50.0</td>
<td>16.7</td>
</tr>
</tbody>
</table>
Figure 3
Table 2 Distribution of Responses to Items Related to Recruitment Methods

Figure 5
Table 3 Distribution of Responses to Items Related to Retention Strategies

Figure 4
SUMMARY

RETENTION NOT CONSIDERED A PROBLEM

A majority of overall respondents agreed there wasn’t a retention problem (87.2%), 80.8% stated their hospital has not had to layoff employees, and answered that it wasn’t difficult to recruit new employees (76.5%). Furthermore, radiology administrators generally agreed there was an influx of employees (63.9%) and disagreed there was a shortage of radiologists (70.2%).

Rural Hospitals Relied on Local Residents When Filling Open Positions

Rural responses (85.7%) were approximately 40% higher than that of urban responses (46.1%) when asked if they believed employees are typically from a rural area. This indicated that allied health professionals working in a rural setting are more likely from a rural area than their urban counterparts.

Rural Hospitals Stated Relocation Programs for Allied Health Professionals to Be Ineffective

Family relocation programs differed in responses from urban and rural administrators. Rural radiology administrators thought it ineffective (71.4%) when compared with urban radiology administrators (7.1%); and vice versa, 46.4% of urban radiology administrators thought it effective compared with 0% of rural radiology administrators.

ASSOCIATIONS AND PROXIMITY TO EDUCATION CENTERS AIDS RECRUITMENT

Radiology administrators generally stated there were advantages to proximity to community colleges and universities, where 94.1% stated there is an accessible community college nearby. Targeting technical and community colleges (79.4%) and co-op programs with universities (80.6%) were seen as effective recruitment techniques for radiologists.

URBAN HOSPITALS HAD LOWER RATES OF BURNOUT

A drastic difference was observed among radiology administrators’ statements regarding a lower burnout rate for urban radiographers than rural counterparts. Urban respondents disagreed 74.1% with the statement concerning employee burnout while rural respondents disagreed only 33%. Rural radiography administrators agreed with the statement of employees experiencing burnout over 50% more than urban radiology administrators who agreed.

DIFFERENCES WERE PERCEIVED WITH REGARD TO RECRUITMENT AND RETENTION OF RADIOGRAPHY PROFESSIONALS

Because the survey instrument was so comprehensive and included a wide array of data, additional factor analysis was
done to determine variable interdependence. The most significant was component 1 which grouped questions about if there was a retention problem, a need for additional allied health professionals, it is difficult to recruit new allied health professionals, current vacancies are available, there is an increased demand, there is generally a shortage of employees, and an influx (negatively scored) of allied health professionals. This revealed that there were significant differences between radiology in mean factor score from all other professions for all of the questions within component 1. An additional difference was found between laboratory directors and respiratory therapists for component 1. This meant there were significant differences in regards to all questions related to component one for mean responses in relation to professions. Radiology was significantly different from all other examined professions and an additional difference was observed between responses by respiratory therapists and laboratory directors.

**RECOMMENDATIONS FOR FURTHER STUDY**

1. A similar study should be conducted where a broader definition of rural versus urban may facilitate better understanding of differences. Several administrators’ considered urban, but who were located in suburbs of major metropolitan areas expressed difficulty competing with larger institutions that are located nearby in more urban locations. A listing of counties’ rurality, ranked 1 through 9, found through the United States Census Service may aid in further defining differences between urban and rural settings.

2. Additional focused research on individual allied health disciplines rather than a more diverse view of different professions may yield additional insight into recruitment and retention strategies.

3. Other states with different concentrations of urban and rural areas may provide additional insight into trends associated with recruitment and retention strategies.

4. This study indicated a difference between urban and rural allied health administrators’ views on family relocation programs and their effectiveness. Additional studies to determine effectiveness should be completed.

5. This study was conducted to examine the views of administrators. Additional studies of allied health team members, new recruits, or current professionals could yield additional information.

6. There was a notable difference about retention and turnover strategies between urban and rural administrators. A study should be undertaken to examine management issues, organizational issues, and unevenly or limited resources at hospitals.

7. Because of views expressed within this study, additional analysis to further determine impact of geographic location upon recruitment and retention is recommended.

**References**


r-6. Golden, R. (2007, September). A collaborative approach to increase the supply of physicians for rural Wisconsin Symposium conducted at the meeting of the NACRHHS, Fort Collins, CO.


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