Radiology Administrators’ Opinions of Baccalaureate Education

By Christa Weigel, MSRS, RT(R)(M)(BD) and Nadia Bugg, PhD, RT(R), FAERS

Radiologic technology educational standards were first implemented by Edward C. Jerman and the Radiological Society of North America (RSNA) in 1920. Initially, radiologic technologists (RTs) received their education in hospital radiology departments through on-the-job training. During the late 1960s and early 1970s, many colleges and universities received federal grants to start healthcare programs which led to an increase in the number of radiologic technology educational programs in the 1970s. Until 1966, most radiologic technology programs consisted of a 1 year curriculum. At this time, the American Registry of Radiologic Technologists (ARRT) implemented a policy requiring students taking the radiography certification exam to have completed a minimum of 24 months of formal training.1 As of September 2005, the number of radiography programs accredited by the Joint Review Committee on Education in Radiologic Technology (JRCERT) was 601. This included 225 certificate programs, 348 associate degree programs, and 28 baccalaureate degree programs.2 According to Wilke et al,3 there are currently 69 baccalaureate degree or degree completion programs in radiologic technology in the United States, which would include programs in radiography, nuclear medicine, and radiation therapy. Although radiologic technology programs are offered at 3 levels, all graduates are required to take the same certification exam.

Some baccalaureate degree programs in radiologic technology prepare students to work in advanced imaging modalities; however, it is more common for technologists to learn additional modalities on-the-job. The United States does not have a uniform curriculum for baccalaureate degree programs in the radiologic science arena. The American Society of Radiologic Technologists (ASRT) has developed a Bachelor of Science in Radiologic Science curriculum as a guideline for baccalaureate degree programs, but the curriculum is not yet a requirement for schools offering a baccalaureate degree in radiologic science. Several of the

EXECUTIVE SUMMARY

Although education in radiologic technology is offered at the baccalaureate level, it is not necessarily the level of choice among radiology administrators for their personnel.

Radiology administrators in Kansas and Nebraska hospitals, which are primarily rural hospitals of 50 beds or less, were surveyed to evaluate their opinions of baccalaureate level radiologic technologists (RTs). Their opinions were also compared to the opinions of California radiology administrators from a study four years prior.

Results showed that the radiology administrators in Kansas and Nebraska prefer RTs with a baccalaureate degree, with all other factors equal among technologists. However, when one employee had more experience, especially in an additional modality, the baccalaureate degree was not the preference of these administrators.
topics included in the curriculum focus on the management and leadership aspects of radiology.4

**Other Countries**

The United States lags behind 25 western nations regarding educational requirements. International societies expanded programs beyond the 24 month norm over 20 years ago.5 The Japan Association of Radiologic Technologists (JART) requires all radiologic technology programs to have a 4 year educational plan.6 Other countries have also taken similar approaches. Australia’s first baccalaureate degree program in medical radiation was offered in 1986.5 The Australian program focuses on critical-thinking and problem-solving skills, which are added values of having a baccalaureate degree. Baccalaureate degree programs in the United States, however, do not have specific curriculum requirements. Although there has not been a resolution adopted in the United States to require the baccalaureate degree as the entry-level standard in radiologic technology, radiology administrators have opinions as to whether a baccalaureate degree should be a requirement in the radiologic technology field.

**Radiology Administrators’ Opinions**

Cruise and Cruise7 conducted a survey of radiology administrators in California asking for their opinions on RT education levels. Of the 157 administrators who responded, 70% reported that other factors were more important than education when hiring applicants with similar experience. These other factors included flexibility, customer service, and knowledge of additional specialties. The results also showed that 84% would offer the same wage regardless of education and 89% of the administrators preferred experience over education. A majority of the administrators did not consider a baccalaureate degree as criteria for a promotion, nor did they consider RTs with baccalaureate degrees to be more career-oriented. Most of those polled were not willing to provide tuition reimbursement for RTs extending their education, although most would be willing to allow more flexible hours for those attending school. Of the administrators surveyed, 80% thought specialization in an additional modality to be more important than a baccalaureate degree. One respondent noted that education does not “take the place of experience and personal desire to achieve”.7 Cruise and Cruise recommended that technologists look closely at what program to choose: “In our opinion, the program should include an advanced certification component (eg, CT, MR, etc) and provide a diverse curriculum that includes human resource management, business management and computer skills.”7 Although these radiology administrators do not see higher education, especially the baccalaureate degree, to be an asset to RTs, administrators in other healthcare fields have different outlook on this same issue. The careers of nursing and radiation therapy are similar to radiologic technology in that they also have 3 educational levels for the same career, but there is a more positive attitude regarding the baccalaureate educated.

**Nursing**

**Timeline**

According to Fagin and Lynaugh,8 nursing schools began in the United States in the 1870s and were modeled after Nightingale’s school. By 1893 many hospital-based schools were opening and began losing education standards at the same time. By the 1920s and 1930s university baccalaureate degree programs were being developed, and in the late 1940s community colleges started offering 2 year associate degrees in nursing because of nursing shortages and the high cost of nursing education. By the 1950s there were 3 distinct nursing programs: the 3-year hospital diploma, the 2-year associate degree program, and the 4-year baccalaureate degree program with graduates at all levels taking the same licensing exam.8 In 1965, the American Nurses Association’s delegates made a recommendation that the baccalaureate degree become the entry-level standard for “professional nurses” and associate and diploma nurses would be considered “technical nurses.”9 The debate over whether the baccalaureate degree would be the entry-level standard has continued. The United States lags behind other countries when it comes to entry-level standards in nursing. In Australia and New Zealand, nursing education is entirely at the baccalaureate level. The United Kingdom’s nursing education is almost completely at the baccalaureate program level with a few programs still at the university diploma level.10

The American Association of Colleges of Nursing received responses from 578 (84.8%) of the nation’s baccalaureate and graduate nursing programs from a survey given in the fall of 2002 regarding their programs and enrollments. It showed that enrollments in entry-level baccalaureate programs increased 8.1% from 2001 to 2002. Enrollments in registered nurse to Bachelor of Science in Nursing (BSN) programs went down 2.1% from 2001 to 2002. Although the total enrollment in baccalaureate programs was up from 2001 to 2002, the total enrollment continued to be down more than 10% from 1995. Graduations from baccalaureate degree programs have decreased by an average of 1030 graduates each year since 1998. Although enrollments have decreased in baccalaureate programs recently, many continue to push for the baccalaureate degree as entry into practice.11

**Nursing Administrators’ Opinions**

In the summer of 1999, a survey was administered by Goode et al12 to all members of the University Health System Consortium Chief Nursing Officer Council. The consortium is comprised of 80 member hospitals, and Chief Nursing Officers (CNOs) from 44 of the hospitals responded to the survey. Both qualitative and quantitative data were collected.
Radiology Administrators’ Opinions of Baccalaureate Education

The academic health centers averaged 51% BSN, 28% associate degree nurses (ADN), 12% diploma nurses, 8% master’s degree nurses, and 1% doctoral prepared nurses. Of the CNOs surveyed, 18% had a goal of the staff mix they wanted in their departments with 25% of these having reached their goal. But they questioned the goals because of the shortage of nurses. Although the health centers averaged 51% baccalaureate prepared nurses, most desired a mix with 71% BSN nurses. The health centers also averaged 8% with master’s degrees, but desirèd 17%. Close to half (43%) offered some sort of salary differential for educational level. A clear majority (71%) saw a difference in practice between ADN and BSN nurses. The most common difference was seen in critical thinking skills. Most also see BSNs as less task-oriented, while possessing more professional behavior, leadership skills, communications skills, focus on outcomes, and focus on patient teaching. CNOs prefer to hire BSN nurses, but they are concerned with the diminishing supply of them. Continued monetary support and distance education might be 2 factors that could help increase the number of BSN graduates. Nursing, however, is not the only healthcare community with controversy over this issue.

Radiation Therapy

Timeline

As of September 2005, 77 accredited radiation therapy programs existed in the United States. Twenty-four of these programs were at the baccalaureate level, 19 were at the associate level, and 34 were certificate programs.² In September 2003, the ASRT mailed a questionnaire to every radiation therapy program inquiring about enrollments and received a response rate of 59%.³ In the fall of 2003, there were 1274 first year students in these programs which was an increase from 2002. Of the radiation therapy programs that reported full enrollments, 758 qualified radiation therapy students were rejected. Although such a large number of students are interested in radiation therapy, the debate continues as to whether the baccalaureate degree should be the entry-level standard.

Sullivan et al¹³ were all members of the ASRT’s Task Force on Educational Standard for radiation therapists. In 1990, the ASRT’s House of Delegates proposed a discussion to raise the radiation therapy educational standards to the baccalaureate level. The discussion continued into October 1990 at the ASRT/American Society for Therapeutic Radiology and Oncology (ASTRO) meeting and in 1991 at the ASRT House of Delegates meeting. After these meetings, the House of Delegates supported a position statement that the baccalaureate degree be the professional standard for radiation therapists by 2000. Over the next 9 months, the ASRT reviewed the ASRT Professional Curriculum in Radiography and Radiation Therapy and finalized new content outlines in the spring of 1992. The research was reviewed at the House of Delegates meeting in June 1992. Four professional baccalaureate degree curriculum models were reviewed at the ASRT/ASTRO meeting in 1992, and in 1993 it was decided that all accredited radiation therapy programs have the potential to fit into the curriculum models under review.¹³

In June 1993, the ASRT delegates finally adopted the resolution requiring all students entering radiation therapy programs in 2000 and after to obtain a baccalaureate degree. The next task for the delegates was to decide what the baccalaureate curriculum should contain. They narrowed it to 3 curriculum models and agreed it should be based on a foundation of liberal arts, sciences, professional practice, education, research, administration/management, and clinical practice education.¹⁴

In 1996, the ASRT requested that the ARRT consider changing the requirements for certification to the baccalaureate degree. In 1999, the ARRT responded by stating that they needed evidence showing the links between the baccalaureate degree and professional practice before considering the change. The ASRT provided evidence, including the article “Advancing Radiation Therapy Education and Practice,”¹⁵ and reports from the Task Force on Education Standards in Radiation Therapy. In January 2000, after reviewing the evidence, the ARRT felt it did not show a direct link between the requirements for professional practice and the baccalaureate degree. In June 2000, the ARRT developed a 6-point action plan to conduct studies comparing graduates at different educational levels. The studies addressed the links between being prepared at the baccalaureate level and the requirements for the profession. One question was whether the baccalaureate degree prepared radiation therapists to display superior performance compared to associate and certificate prepared therapists. None of the 6 studies showed a clear advantage of the baccalaureate prepared radiation therapists. The ARRT announced in June 2002 that they were not supporting the baccalaureate degree to be the entry-level standard.¹⁶ Arguments for and against the baccalaureate degree exist not only among radiation therapists, but also among radiation therapy administrators.

Radiation Therapy Administrators’ Opinions

A survey was administered to radiation therapy administrators by Collins and Jensen¹⁷ to demonstrate the benefits of the baccalaureate degree in radiation therapy. A telephone interview questionnaire was administered to 50 radiation therapy directors from 5 Midwestern states. The questions were related to the complexity of radiation treatments, level of education required for radiation therapists, and benefits of higher education in radiation therapy. A return rate of 100% was received and a chi square statistical analysis was used to
compare data. Of the administrators interviewed, 42% held baccalaureate degrees, 26% held certificates, 18% held associate degrees, and 14% held master's degrees.

Of the 50 administrators, 36% believed the baccalaureate degree was necessary to keep up with technology while 60% did not and 4% did not respond. One administrator who agreed with the baccalaureate degree requirement commented, “The degree develops a more rounded individual with better people skills.” Many administrators who answered “no” agreed that the baccalaureate degree would help with the complexity of the field, but they did not see it as a prerequisite. Seventy-two percent of the administrators employed therapists with baccalaureate degrees while 28% did not. Of the 72% employing therapists with baccalaureate degrees, 41% see them as having better critical-thinking and decision-making skills and 66% required the baccalaureate degree as a minimum for management positions. Seventy-two percent of the administrators employed therapists with baccalaureate degrees while 28% did not. Of the 72% employing therapists with baccalaureate degrees, 41% see them as having better critical-thinking and decision-making skills and 66% required the baccalaureate degree as a minimum for management positions. Ninety-six percent responded that no pay increase was given to employees with baccalaureate degrees. Most hospitals in the study only awarded higher salaries for years of experience and 64% would rather hire individuals with a baccalaureate degree over those with an associate degree if all other factors were equal. Thirty-two percent had no preference in regard to degree status, while 4% would not hire a baccalaureate educated therapist over an associate educated therapist with all other factors equal. Of the administrators surveyed, 46% believed more people would enter the profession if the baccalaureate degree was the entry-level requirement, while 48% thought it would decrease, and 6% thought it would have no effect on the numbers. One reason the administrators believed the numbers would grow was because there would be more marketing for the profession if it was in a university setting. Those who did not believe the numbers would rise felt the cost of the degree would be too high in relation to the salary of a radiation therapist. Given the numbers in the survey, one can see that the radiation therapy community is split concerning the baccalaureate-prepared therapist.

When comparing radiologic technology, nursing, and radiation therapy, there are several similarities in the backgrounds of these disciplines. All 3 started as more hospital-based programs and have progressed to offering a degree at the baccalaureate level. They are also similar in the respect that 3 educational levels are offered; however, the same certification exam is given no matter what the educational background. One difference among the disciplines is that the nursing and radiation therapy fields have position statements in place about making the baccalaureate degree the entry-level standard and radiologic technology has not progressed to this point.
Although a position statement is in place in both radiation therapy and nursing, it continues to be an issue of huge debate. Another difference between these 3 fields is the administrators' opinions regarding the baccalaureate degree. The baccalaureate degree has stronger support from nursing administrators than from the administrators in radiologic technology and radiation therapy.

The purpose of the survey reported in this paper was to determine if radiology administrators in Kansas and Nebraska have similar opinions to California radiology administrators regarding the educational level of RTs. It was also administered to compare opinions of radiology administrators with various educational backgrounds. The hypothesis for this study was: Radiology administrators place greater value on RTs with baccalaureate degrees regarding hiring and promotional procedures.

Methods

Pilot Study

A pilot study was administered to 11 radiology administrators from states other than Kansas and Nebraska to serve as a review of the survey questions and to determine the validity of the survey instrument. No administrators from Kansas and Nebraska were included in the pilot study so they were not sensitized to the survey. All students in the master’s of science in radiologic science program at Midwestern State University were asked if they were ever in the position of radiology administrator. Nine responded as having been a radiology administrator at some point and 1 other gave the names of 2 radiology administrators and how to contact them, giving 11 administrators total. The 11 administrators were sent e-mails regarding the survey with an attachment to the survey at www.surveymonkey.com. The survey included 15 opinion-based questions regarding baccalaureate educated RTs and a section of 5 demographic-oriented questions. The questions were similar to those used in the survey of Kansas and Nebraska administrators.

Five of the 11 responded, giving a 45% response rate. All the respondents held a baccalaureate degree as their highest level of education and 60% had over 10 years of experience as an administrator. A majority (80%) responded as having at least one RT within their department holding a baccalaureate degree with 60% having at least one RT within their department holding a baccalaureate degree in radiologic science. All surveyed would hire an experienced technologist with a certificate or associate’s degree over an inexperienced technologist with baccalaureate degree. Eighty percent would give a higher wage to those with a baccalaureate degree in radiologic science. Forty percent would retain an employee with an associate’s degree if experience was similar and 40% also had other reasons for retaining employees with similar work experience. The respondents were asked to provide feedback regarding the survey questions. Overall, the comments were positive, except for needing to include a not applicable response on a couple of questions. Having experts in the area preview the survey helped increase the content validity. Suggestions were evaluated and questions were changed as needed.

Sample

The population for this survey was found by a convenience sample and was granted approval by Midwestern State University’s Human Subjects Review Committee and was assigned the file number 05072602. All radiology administrators in hospitals in Kansas and Nebraska were surveyed. The list of hospitals with radiology departments in Kansas (131) and Nebraska (88) was obtained through the 2003-2004 American Hospital Association Guide.18 The survey questions were based on questions used in the survey of California administrators with permission of Cruise and Cruise.7

The initial survey was sent to 219 radiology administrators from Kansas and Nebraska. All surveys were coded for follow-up purposes. The return rate of usable responses for the first mailing was 64% (141). A follow-up survey was sent to all non-respondents and yielded a final usable response rate of 72% (158). Seven other surveys were returned without responses because the hospital no longer housed a radiology department, while 2 surveys were returned and unusable because of improper completion of the survey.

Limitations

A number of limitations exist with this study. One is that all respondents were from a specific geographic location. Most administrators (74%) were also from rural hospitals with 50 beds or less. A small sample size, compared to the number of radiology administrators in the United States, is another limitation to this study. The survey could be strengthened by randomly surveying radiology administrators from each state and using a larger sample size.

Results

Demographics

The degree held most often by the radiology administrators in Kansas and Nebraska was the associate’s degree with 39% (61) having this degree. This was followed by the baccalaureate degree with 26% (42). A majority of those surveyed were female (62%) and were in hospitals that had less than a 50
bed capacity (74%). Most of Kansas and Nebraska is comprised of rural communities. The experience of the radiology administrators varied among the respondents with 40% (63) having 0-5 years of experience and 43% (68) having over 10 years of experience. Details of the radiology administrators’ demographics can be found in Table 1.

**Baccalaureate RTs**

The majority of administrators surveyed (53%) had at least one RT within his/her department with a baccalaureate degree. Forty percent of the administrators did have at least one RT within their departments with a baccalaureate degree specific to radiologic science. Seventy-five percent of the departments with baccalaureate degrees had technologists with degrees specific to a radiologic science area.

**Employment**

With candidates for employment having equal work histories, 32% of respondents preferred to hire a candidate with some form of baccalaureate degree, whether it was in radiologic science or not. Of those who preferred a baccalaureate degree, 65% held a baccalaureate degree or higher themselves. However, 91% of respondents would rather hire a technologist with experience and a certificate or associate’s degree over an inexperienced technologist with a baccalaureate degree.

Half of those who responded would give the highest wage to a candidate for a position with some type of a baccalaureate degree over a candidate with equal experience but a lower educational background. When it came to making staff reductions, 50% would consider other factors than education assuming all RTs within the department had similar work experience. See Table 2 for questions regarding employment.

<table>
<thead>
<tr>
<th>Table 1. Respondent Demographics and Hospital Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demographic</strong></td>
</tr>
<tr>
<td>State of Residence</td>
</tr>
<tr>
<td>Kansas</td>
</tr>
<tr>
<td>Nebraska</td>
</tr>
<tr>
<td>No response</td>
</tr>
<tr>
<td>Highest Level of Education</td>
</tr>
<tr>
<td>Certificate</td>
</tr>
<tr>
<td>Associates degree</td>
</tr>
<tr>
<td>Baccalaureate degree</td>
</tr>
<tr>
<td>Master’s degree or higher</td>
</tr>
<tr>
<td>No response</td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Female</td>
</tr>
<tr>
<td>No response</td>
</tr>
<tr>
<td>Years of Experience as an Administrator</td>
</tr>
<tr>
<td>0-5 years</td>
</tr>
<tr>
<td>6-10 years</td>
</tr>
<tr>
<td>Over 10 years</td>
</tr>
<tr>
<td>No response</td>
</tr>
<tr>
<td>Hospital Bed Capacity</td>
</tr>
<tr>
<td>Less than 50 beds</td>
</tr>
<tr>
<td>51-100 beds</td>
</tr>
<tr>
<td>101-200 beds</td>
</tr>
<tr>
<td>201-300 beds</td>
</tr>
<tr>
<td>Over 300 beds</td>
</tr>
<tr>
<td>No response</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 2. Multiple Choice Survey Questions Regarding Radiology Administrators’ Opinions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Question</strong></td>
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<tr>
<td>Assuming all applicants for a staff level RT position have equal work histories, which candidate would you prefer?</td>
</tr>
<tr>
<td>When making staff reductions, assuming all RTs have similar experience, which RT would you retain?</td>
</tr>
<tr>
<td>When all candidates have equal work histories, to whom would you offer the highest wage?</td>
</tr>
</tbody>
</table>
In a majority of the departments (84%), a baccalaureate degree was not a criterion for management positions. Fifty-four percent, however, would prefer to promote an RT with a baccalaureate degree in radiologic science over an RT with a baccalaureate degree in another area. See Table 3 for detailed results of questions regarding management.

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you have any RTs within your radiology department that hold a</td>
<td>53% (84)</td>
<td>46% (73)</td>
<td>1% (1)</td>
</tr>
<tr>
<td>baccalaureate degree?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you have any RTs within your radiology department that hold a</td>
<td>40% (63)</td>
<td>60% (95)</td>
<td>0% (0)</td>
</tr>
<tr>
<td>baccalaureate degree in radiologic science?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Would you hire an experienced RT with a certificate or associates degree</td>
<td>91% (144)</td>
<td>8% (13)</td>
<td>1% (1)</td>
</tr>
<tr>
<td>over an inexperienced RT with a baccalaureate degree?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When considering a supervisory promotion, would you promote an RT with a</td>
<td>42% (66)</td>
<td>54% (85)</td>
<td>4% (6)</td>
</tr>
<tr>
<td>baccalaureate degree over an RT with an associates degree in radiologic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>science or certificate?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is a baccalaureate degree a criterion for promotion to management within</td>
<td>15% (23)</td>
<td>84% (133)</td>
<td>1% (2)</td>
</tr>
<tr>
<td>your radiology department?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For supervisory or upper management positions, would you prefer to</td>
<td>54% (86)</td>
<td>42% (66)</td>
<td>4% (6)</td>
</tr>
<tr>
<td>promote a baccalaureate degree RT who majored in radiologic science over</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>an RT who obtained a baccalaureate degree in another area?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In your opinion, are your current employees with baccalaureate degrees</td>
<td>8% (13)</td>
<td>48% (75)</td>
<td>44% (70)</td>
</tr>
<tr>
<td>more dedicated to their jobs than your employees without baccalaureate</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>degrees?</td>
<td></td>
<td></td>
<td>applicable</td>
</tr>
<tr>
<td>Does your institution give tuition reimbursement to radiologic science</td>
<td>46% (73)</td>
<td>52% (82)</td>
<td>2% (3)</td>
</tr>
<tr>
<td>employees to obtain a baccalaureate degree?</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>If a radiologic science employee would return to school to obtain a</td>
<td>77% (121)</td>
<td>18% (29)</td>
<td>5% (8)</td>
</tr>
<tr>
<td>baccalaureate degree, would your institution be willing to provide</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>flexible scheduling to the employee?</td>
<td></td>
<td></td>
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<tr>
<td>Do you believe specialization in an advanced modality (CT, MRI, ultrasound,</td>
<td>86% (136)</td>
<td>11% (8)</td>
<td>3% (4)</td>
</tr>
<tr>
<td>etc.) is more important than having a baccalaureate degree?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you believe inexperienced technologists with baccalaureate degrees in</td>
<td>27% (42)</td>
<td>65% (103)</td>
<td>8% (13)</td>
</tr>
<tr>
<td>radiologic science are more knowledgeable in the areas of advanced</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>modalities than inexperienced technologists with a certificate or</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>associates degree?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In your opinion, are your RTs with baccalaureate degrees more willing to</td>
<td>9% (15)</td>
<td>44% (69)</td>
<td>2% (3)</td>
</tr>
<tr>
<td>cross-train than other RTs?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Management

In a majority of the departments (84%), a baccalaureate degree was not a criterion for management positions. Fifty-four percent, however, would prefer to promote an RT with a baccalaureate degree in radiologic science over an RT with a baccalaureate degree in another area. See Table 3 for detailed results of questions regarding management.
Eighty-six percent of the respondents believed specialization in an advanced modality to be more important than a baccalaureate degree. Of those who believed a baccalaureate degree to be more important than specialization, 72% (13) held a baccalaureate degree or higher.

Advanced Education and Modalities

A majority of the hospitals (77%) would provide flexible scheduling to an employee in radiology who wished to further his/her education. A smaller amount (52%) would not give tuition reimbursement to those continuing their education. Eighty-six percent of the respondents believed specialization in an advanced modality to be more important than a baccalaureate degree. Of those who believed a baccalaureate degree to be more important than specialization, 72% (13) held a baccalaureate degree or higher. A majority (65%) did not consider inexperienced technologists with baccalaureate degrees to be more knowledgeable in advanced modalities than inexperienced technologists with a certificate or associate's degree. Forty-four percent did not agree that RTs with baccalaureate degrees are more willing to cross-train and 48% did not agree that baccalaureate educated technologists are more dedicated to their jobs. Table 3 has specifics to questions on education and modalities.

Discussion

Although a greater number of respondents would prefer to hire a technologist with a baccalaureate degree and would offer a higher wage to a technologist with a baccalaureate degree over a technologist with another educational background, half of the respondents looked at factors other than education when making staff reductions. The factors looked at the most included the number of years the technologist was employed at the institution and his/her work quality or competency of work.

A clear majority of the administrators believed specialization in an advanced modality to be more important than having a baccalaureate degree. Similarly, when other factors were given for determining a wage, having an advanced certification was the answer provided most often, followed by work experience. Personality and attitude were the “other” factors given most often when it came to looking at who to hire when candidates have equal work histories. One respondent said, “Hire for attitude, train for skill.” Experienced technologists with certificates or an associate’s degree also held a clear majority over inexperienced RTs with baccalaureate degrees when it came to hiring purposes.

Some of the responses from this survey were inconsistent with the results of the Cruise and Cruise survey. A great majority of Cruise and Cruise’s responses regarding preference, retention, and salary of RTs were “other factors.” This survey had more responses giving preference to baccalaureate educated technologists. When it came to supervisory questions, Cruise and Cruise had similar responses to this survey. Both surveys found a majority of facilities do not require a baccalaureate degree for supervisory positions. Also, a majority of radiology administrators would not prefer a baccalaureate degree over an associate’s degree, but would prefer a baccalaureate degree in radiologic science over another baccalaureate degree when it comes to supervisory positions. If baccalaureate degree programs followed the BSRS curriculum developed by the ASRT, baccalaureate educated individuals would have a background in management and leadership.

Both surveys also had similar responses giving preference to specializations in other modalities over education. The survey in this paper was completed 4 years after the Cruise and Cruise survey. The differences in opinions regarding the baccalaureate degree could be the result of several factors. It may be that radiology administrators have developed a higher regard for the baccalaureate degree. Other factors may include the geographic location of the respondents or the fact that more baccalaureate degrees are offered at a distance, giving more technologists the opportunity to obtain the degree. With many administrators placing emphasis on additional modalities, it may be worthwhile to evaluate baccalaureate programs in radiologic science to determine how much additional modality coursework and clinical time is actually included in baccalaureate programs. If baccalaureate degree programs are including didactic and clinical work in the additional modalities, that adds to the value of the degree. See Tables 4 and 5 for a comparison of the 2 studies.

The US Department of Labor categorizes RTs as technical rather than professional workers due to lack of educational standards and preparation. They state that 1 component of a profession is a “requisite advanced degree,” which usually equals a 4-year degree. According to Tilson, radiologic science is “a discipline and profession being birthed.” He claims the
The technical definition of discipline is an area of study that is built on research. And within radiology, there are not enough individuals educated at the level needed to incorporate the research required for the field to become a discipline. According to Martino, the value of well educated radiologic technologists needs to be demonstrated to administrators. The benefits of a baccalaureate degree are usually elusive to the administrator because he or she sees technologists as "technical" workers. With technology today, including...
digital imaging, teleradiology, and PACS, technologists have become more than just imagers. “They are patient information experts who capture, manipulate, transmit, archive and retrieve knowledge.”21

Conclusions

The hypothesis of this survey has been rejected based on the results of the survey. Parts of it, however, do indicate that radiology administrators prefer technologists with a baccalaureate degree when all other factors are equal. The results of this survey also indicate that, in some respects, radiology administrators’ opinions regarding the baccalaureate degree are changing with time. In relation to hiring, retention, and salary, the findings from this survey were more positive concerning the baccalaureate prepared radiographer compared to the California survey. The results from both surveys, however, show that experience, especially in advanced modalities, is of great importance to radiology administrators.

References


AHRA Home-Study Resources

Radiology Administrators’ Opinions of Baccalaureate Education

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Carefully read the following multiple choice questions. Mark your answers on the answer sheet found on page 31 and mail or fax the answer sheet to:

The credit earned from the Quick Credit test accompanying this article may be applied to the AHRA certified radiology administrator (CRA) human resource management domain.

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Questions

Instructions: Choose the answer that is most correct.

1. Who first implemented radiologic technology educational standards in 1920?
   a. Edward C. Jerman
   b. Radiological Society of North America (RSNA)
   c. American Registry of Radiologic Technologists (ARRT)
   d. Both a and b

2. In 1966, the ARRT implemented a policy requiring students taking the radiography certification exam to have completed:
   a. An associated degree program
   b. A baccalaureate degree program
   c. A minimum of 24 months of formal training
   d. All of the above

3. As of September 2005, the number of radiography programs accredited by the Joint Review Committee on Education in Radiologic Technology (JRCERT) was:
   a. 225
   b. 348
   c. 601
   d. None of the above

4. According to a career planner by Wilke and others published in 2002, the number of baccalaureate degree or degree completion programs in Radiologic technology in the U.S. was:
   a. 28
   b. 69
   c. 225
   d. 348

5. A curriculum guideline for baccalaureate degree programs has been published by the:
   a. ASRT
   b. JRCERT
   c. AHRA
   d. ARRT

6. Most international societies outside of the U.S. expanded radiography educational programs beyond the 24 month norm:
   a. In 1995
   b. In 1999
   c. In 2002
   d. Over 20 years ago
7. In a survey conducted by Cruise and Cruise, what percent of radiology administrators reported that other factors were more important than education when hiring applicants with similar experience?
   a. 30%
   b. 50%
   c. 70%
   d. 100%

8. In 1965, the American Nurses Association made a recommendation that the baccalaureate degree become the entry-level standard for:
   a. Technical nurses
   b. Professional nurses
   c. Diploma nurses
   d. Both a and b

9. In a survey of nursing administrators, a clear majority saw a difference in practice between ADN and BSN nurses with regard to their:
   a. Clinical skills
   b. Critical thinking skills
   c. Management skills
   d. None of the above

10. As of 2005, how many accredited radiation therapy programs in the U.S. were at the baccalaureate level?
    a. 24
    b. 34
    c. 77
    d. 106

11. The ARRT failed to support the B.S. degree for radiation therapists as the entry level standard because:
    a. There are not enough B.S. educational programs in the U.S.
    b. There is no standard curriculum for B.S. educational programs in radiation therapy
    c. There is no direct link between the requirements for professional practice and the baccalaureate degree
    d. None of the above

12. According to a survey conducted in 2002, what percent of radiation therapy administrators believed the B.S. degree was necessary to keep up with technology?
    a. 42%
    b. 60%
    c. 36%
    d. 100%

13. Radiologic Technology, nursing, and radiation therapy all:
    a. Have three education levels
    b. Take the same certification exam within their discipline
    c. Have position statements support the B.S. degree as the entry-level standard
    d. Both a and b

14. Which of the following professions have stronger support from administrators for the baccalaureate degree?
    a. Radiologic technology
    b. Nursing
    c. Radiation therapy
    d. None of the above

15. The current study surveyed radiology administrators in:
    a. Nebraska and Texas
    b. Oklahoma and Kansas
    c. Kansas and Nebraska
    d. Florida

16. In the current study, what percent of administrators had at least one RT within their department with a B.S. degree specific to Radiologic sciences?
    a. 53%
    b. 75%
    c. 40%
    d. None of the above

17. In the current study, 91% of respondents would rather hire a technologist with experience and a certificate or associate’s degree over an inexperienced technologist with a baccalaureate degree.
    a. True
    b. False

18. When experience is equal, half of the respondents in the current study would give the highest wage to a candidate with a(an):
    a. Associate degree
    b. Baccalaureate degree
    c. Certificate/diploma
    d. None of the above

19. One important finding from the current study is that 86% of respondents believed specialization in an advanced modality is more important than a(an):
    a. Associate degree
    b. Baccalaureate degree
    c. Few years of experience
    d. Good attitude

20. Why does the U.S. Department of Labor categorize RTs as technical rather than professional workers?
    a. Our lack of educational standards and preparation
    b. Our need for close supervision by physicians
    c. Our inability to unionize
    d. None of the above

21. In relation to hiring, retention, and salary, the findings from this survey were more positive concerning the baccalaureate prepared radiographer compared to the previous survey done in California.
    a. True
    b. False
### Radiology Administrators’ Opinions of Baccalaureate Education

1. _____ 12. _____
2. _____ 13. _____
3. _____ 14. _____
4. _____ 15. _____
5. _____ 16. _____
6. _____ 17. _____
7. _____ 18. _____
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9. _____ 20. _____
10. _____ 21. _____
11. _____

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