

Respiratory Care Managers' Preferences Regarding Baccalaureate and Master's Degree Education for Respiratory Therapists

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OBJECTIVE: Determine respiratory care managers' preferences regarding baccalaureate and master's degree education for practicing respiratory therapists (RTs). **METHODS:** A survey was mailed to 1,444 members of the Management Section of the American Association for Respiratory Care. Managers were asked about their preferences for RTs who hold or are pursuing baccalaureate degrees, the value of various courses of study (majors), and degrees earned via distance learning. Demographic data and attitudes about distance learning, content, and target audiences for master's degree programs were also collected. **RESULTS:** Twenty-six percent of those polled responded. Thirty-four percent of respondents preferred baccalaureate degree over associate degree for entry-level RTs, 28% had no preference, and 38% no opinion. Regarding hiring of experienced RTs, 70% of respondents preferred RTs with baccalaureate degrees. Regarding baccalaureate completion degree majors, advanced respiratory care practice was most highly valued. Sixty percent thought that a degree earned via distance learning was equivalent to one earned in the traditional classroom setting; 23% thought a distance learning degree was of less value; 3% thought a distance learning degree was of greater value; and 14% were uncertain. The respondents thought graduate degrees were valuable for managers, clinical specialists, educators, and supervisors. Although 95% of managers would recommend graduate programs that have some distance learning courses, only 75% would recommend programs offered solely via distance learning. **CONCLUSIONS:** For RTs who plan to complete a baccalaureate degree, majoring in advanced respiratory care practice is potentially valuable. Managers showed preference for hiring experienced RTs with baccalaureate degrees but did not prefer entry-level therapists with baccalaureate degrees. Graduate degrees are supported for managers, clinical specialists, educators, and supervisors. Most managers supported some use of distance learning for graduate degrees. *Key words: education, distance learning, graduate education, professional education, respiratory therapy.* [Respir Care 2003;48(9):840–858. © 2003 Daedalus Enterprises]

Introduction

The education requirement for entry into the respiratory care profession has changed as the profession has matured.

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The entry-level requirement in 1962 was a minimum 12-month curriculum. At present, the entry-level requirement is an associate degree.^{1,2} The associate degree is also the requirement for respiratory therapists (RTs) to earn the advanced practice Registered Respiratory Therapist (RRT) credential.² Discussions have been taking place for over 2 decades regarding increasing the required education beyond the associate degree for advanced RTs. The American Association for Respiratory Care (AARC) has led several initiatives for advancing RT education. In 1990, the AARC launched a baccalaureate completion program in partnership with Western Michigan University.³ Next the AARC held 2 education consensus conferences, which recommended post-associate-degree courses for RT specialty practice^{4,5} and graduate programs to prepare faculty, clinical specialists, and researchers.⁴ In 2001, the AARC

established a coalition and an Internet Listserv on baccalaureate and graduate respiratory therapy education.⁶

The academic literature contains several editorials and limited research on RT baccalaureate and master's degree education. Editorials in *RESPIRATORY CARE* have called on educators to offer advanced courses to practicing RTs⁷ and for RTs to be lifelong learners and continue their education.^{7,8} Kester and Stoller believe that RTs should move beyond learning just the basic knowledge of treatment modalities; they should also help to find the most appropriate therapy delivery method for each patient, be sensitive to age-related issues, adapt clinical policies across a broad range of practice settings, conduct research and disseminate research findings to advance the profession, and effectively communicate with all health care team members.⁸

Research from the early 1990s, involving clinicians, educators, managers, and physicians, looked at the additional knowledge, skills, and attributes necessary for advanced RTs.¹ That study was extended to evaluate the length of and award for advanced-level preparation, but the participants were unable to come to a consensus. However, the participants predicted a duration of longer than 3 postsecondary academic years.⁹ The majority of published studies evaluating advanced-level respiratory therapy education involved invited participants from a cross-section of education, management, medicine, and respiratory care clinical subspecialty communities.^{1,4,5,9} Using invited participants may have biased study outcomes. Also, none of these studies focused on the specific needs of the RTs who are the target population for advanced education. In preparation for the second AARC consensus conference, an impact study surveyed a random sample of respiratory care managers, respiratory care program directors, physicians, RTs, and administrators of hospitals, home care, rehabilitation, and skilled nursing facilities.¹⁰ Limitations of the impact study included that the authors did not report the response frequencies for Likert-scale items by individual participant groups and that the survey response rate was only 36%. However, the responses of the various participant groups to the impact study's open-ended questions appear under separate categories. The number of written comments made by the RT group included more negative statements than positive statements toward advanced degrees.

Another study that addressed RTs' views found that 40% of practicing RTs (in a Midwestern state) who did not have baccalaureate degrees desired them. RTs questioned how their managers would value a baccalaureate degree, which degree major was most desirable, and how the degree would be valued if earned via distance learning (DL).¹¹ Knowledge of respiratory care managers' perspectives on these baccalaureate degree questions could provide RTs with valuable professional guidance. The present study

tested the following hypotheses related to advanced degrees for practicing RTs:

1. Respiratory care managers will value baccalaureate and master's degrees earned by practicing RTs, but will not view them as essential for all RTs.

2. Respiratory care managers will value respiratory care baccalaureate degree majors more highly than other degree majors for practicing RTs who complete baccalaureate degrees.

3. Respiratory care managers will recommend graduate degree majors related to leadership, clinical specialist, education, and research roles for practicing RTs.

4. Respiratory care managers will value baccalaureate and master's degrees earned via DL by practicing RTs.

Methods

A survey (see Appendix) was mailed to 1,444 members of the AARC's Management Section. The mailing included a cover letter (with an original signature) explaining the purpose of the survey, and a self-addressed stamped envelope. The survey asked about baccalaureate degrees, master's degrees, and DL, and for demographic information (current job title, respiratory care credentials, type of respiratory care education program, employment setting, and post-high-school academic preparation). For each post-high-school degree program, respondents were asked whether they completed the program before or after respiratory care training, if most courses were taken evenings or weekends, and if any courses were taken via DL.

The respondents were asked if they would prefer hiring an RT who is working toward a baccalaureate degree, if their facilities gave financial incentives to personnel who have or are pursuing baccalaureate degrees, and the average amount of the incentive. Respondents were also asked for their opinions regarding the value of various baccalaureate degree majors (business, management, teaching, science, liberal arts, advanced respiratory care practice, and other categories) for RTs. The value ratings were made on a 3-point scale; the choices were high value, moderate value, and low value. The degree categories included in this study were the same as those in my 1995 survey (partially funded by the Wisconsin Society for Respiratory Care) regarding baccalaureate degree completion, because in that study the only "other" degree majors listed were careers unrelated to respiratory care.¹² The present survey also asked the respondents if they prefer to hire an entry-level RT with a baccalaureate degree versus associate degree or have no opinion.

The survey included 2 open-ended questions about master's degrees. The questions asked respondents to recommend desirable master's degree majors for practicing RTs and job titles that should require a graduate degree. Respondents also rated (on 3-point scale of high, moderate,

and low) the value of 21 specific course topics that might appear in an RT master's degree program. The items for this scale were generated from a convenience sample ($n = 4$) of RT managers.

The section containing DL questions began with a definition of DL that included courses conveying content and dialogue between students and instructors via written material, videotapes or audiotapes, audio-teleconferencing, satellite, television, or other electronic media. One question asked respondents to compare the value of a baccalaureate degree earned (by a practicing RT) primarily via DL to the same degree earned via traditional classroom education. The 4 response options were higher value, equal value, lower value, and uncertain. Respondents who had hired RTs whose entry-level training was via DL rated (with yes/no responses) their satisfaction with the employees' knowledge, and whether they would hire another RT whose entry-level training was via DL. Regarding graduate education, respondents answered 2 yes/no questions as to whether they would recommend graduate programs that offered some or all of their courses via DL. The final DL measurement was made with the Distance Education Attitude Scale, an 11-item, 7-point semantic differential scale that has a Cronbach's alpha of 0.86 and uses the descriptors *interesting/boring*, *affordable/costly*, *useful/useless*, *appropriate/inappropriate*, *time-saving/time-consuming*, *creative/unimaginative*, *successful/unsuccessful*, *practical/impractical*, *nonthreatening/threatening*, *active/passive*, and *simple/complex*.¹¹ Values were assigned to scale items ranging from +3 to -3. The attitude score was generated by computing the sum of all 11 values.

To establish content validity and improve the format, the survey and cover letter were pilot-tested by a convenience sample of 12 respiratory care managers who had no prior exposure to the survey. They suggested revisions to improve clarity, to move from basic to complex questions, to change formatting to increase white space, and to change certain of the master's degree program content items. These respondents also timed how long it took to complete the survey. The recommended changes were implemented and 2 graduate students proofread the final version.

Implementation

The surveys were mailed through the AARC to current members of the AARC Management Section in October 1999. Some survey recipients contacted me to ask whether they should respond to the survey, because they worked as educators or were retired; they were asked not to respond.

To study the representativeness of the respondent sample, a graduate student assistant telephoned 25 managers who had been sent the survey but had not responded (nonresponders), asked a subset of the survey questions (including the majority of the questions about baccalaureate degrees and all the demographic questions),

and recorded the data on a modified survey form. The sample size required for 80% power could not be calculated because no nonresponder data from similar studies were available to estimate effect size. A sample size of 25 nonresponders were selected, because it fit within the available resources. The AARC supplied the contact information for 50 members of the Management Section, selected at even intervals from an alphabetical list, and numbered 1-50. A graduate student assistant attempted to contact the 25 members associated with the odd numbers on the list to determine if they received and returned the survey. The assistant thanked survey respondents and interviewed consenting nonresponders. Next the assistant attempted to reach managers associated with the even numbers on the list, until data had been collected for 25 nonresponders.

Data Analysis

Data from the returned surveys, including legible zip codes from the survey's return envelopes, were entered into statistics software (SPSS version 10.0, SPSS, Chicago, Illinois). Frequency data were screened for data entry errors, errors were corrected, and final frequency reports were generated. A graduate student assistant and the author independently categorized the responses to the open-ended questions regarding recommended graduate degrees majors and jobs that should require a graduate degree. Disagreements about category membership were resolved with discussion.

Statistical tests assessed the representativeness of the sample and evaluated attitudes toward DL and how prior DL experience affected respondents' opinions. Results from surveys with missing data were included in analyses when sufficient data existed for the analysis. Response categories were combined whenever there was insufficient data for analysis of individual categories.

The representativeness of the study was tested via statistical analyses between nonresponders and respondents, along with comparisons of respondent data and data from the AARC's year 2000 RT Human Resources Survey (a national survey).¹³ Comparisons were made of respondents' and nonresponders' valuations of various baccalaureate degree majors, practicing RTs earning baccalaureate degrees via DL, hiring RTs with baccalaureate versus associate degrees, RTs who had entry-level RT training via DL, job titles, professional credentials, respiratory care training, employment setting, highest academic degree, and exposure to DL coursework. Comparisons were made with the chi-square test of homogeneity, and differences were considered statistically significant when $p < 0.05$. Data yielding expected frequencies of less than 5 in more than 2 cells were recomputed after combining appropriate data

from 2 or more categories. In analyses where the chi-square test was significant for tests involving 3 or more categories, pairwise comparisons were conducted, using the sequential Bonferroni correction method, to control for a familywise $p < 0.05$.

The chi-square goodness of fit test was used to determine whether the data from the present study agreed with data from the AARC Human Resources Survey. Respondents' regional location were categorized by comparing legible zip codes from the survey's return envelopes and the AARC Human Resources Survey's 9 census regions. The job titles used in the present study (supervisor, assistant or associate director, director, and administrator) differed from those of the AARC Human Resources Survey (supervisor and director). The 2 choices in the AARC Human Resources Survey were intended to separate supervisors from upper level managers (Dubbs WH, American Association for Respiratory Care, 2001, personal communication). Thus, respondents in the present study who selected "supervisor" or "associate or assistant director" were combined, and those who selected "director" or "administrator" were combined, and those combined values were compared to the AARC Human Resources Survey's supervisor and director categories, respectively. The combined supervisor and director categories were compared with the AARC Human Resources Survey's data on the frequency of holding the Registered Respiratory Therapist credential, the Registered Pulmonary Function Technologist credential, the perinatal/pediatric credential, and with respiratory care educational preparation, highest academic degree, and employment setting. Respiratory care education comparisons were made between this study's categories of on-the-job training, certificate, and combined 1-plus-1, 2-year, 2-plus-2, and baccalaureate program and the AARC Human Resources Survey's categories of on-the-job training, technician, and RT program, respectively. This study's employment setting categories of hospital care, extended care, and home care were compared to the AARC Human Resources Survey's categories of acute care, combined long-term acute care/rehabilitation hospital and skilled nursing, and home care, respectively. Post-hoc power analyses and effect sizes were conducted for all tests of representativeness that were not significant.

The Pearson r correlation coefficient was calculated to test the relationships between both the DL attitude score and DL experience with questions about baccalaureate, master's degree, and demographic data. Differences were considered statistically significant when $p < 0.05$. The questions regarding baccalaureate education addressed attitudes about DL and how the respondent's DL experience correlated with his or her valuation of DL baccalaureate education, satisfaction

with the knowledge of RTs who used DL for their entry-level preparation, and desire to hire additional RTs with entry-level DL preparation. Correlations for graduate program questions tested how well DL attitude and DL experience related to recommendations of graduate programs with some or all DL coursework. The DL attitude score was correlated with the demographic variables of job title, highest degree held, and prior DL experience. Additional correlations compared how the 11 items of the DL attitude scale correlated with prior DL experience, to determine which items were most influenced by DL experience.

Results

Representativeness

Sixteen of the 1,444 mailed surveys were either undeliverable or sent to educators or retired RTs, who were asked not to respond. With the revised sample size (1,428) there were 365 respondents (a response rate of 26%). Comparison of respondent and nonresponder demographic data showed no significant differences in professional credentials, respiratory care education, employment setting, or experience using DL. The nonresponder group differed in job titles, having a greater number of "administrator" and "other" classifications, and in having more nonbaccalaureate and fewer graduate degrees than the respondent group (Tables 1 and 2).

Regarding baccalaureate degree questions, no statistically significant differences were found for how respondents and nonresponders valued practicing RTs completing baccalaureate degrees in advanced respiratory care practice, teaching, science, and business, and hiring baccalaureate versus associate degree candidates for entry-level positions. The nonresponders gave both the liberal arts and management degree majors more high and moderate value ratings than did the respondents. Also, nonresponders had less preference for hiring an RT who has or is working toward a baccalaureate degree than did the respondents. There was an insufficient response rate to calculate whether there was a difference between respondents and nonresponders in their ability to hire RTs who have entry-level preparation via DL (Tables 3 and 4).

Comparisons for questions related to DL and baccalaureate degrees revealed the following. Nonresponders were more likely to be uncertain or view DL as having a lower value than classroom education. The nonresponders had hired fewer RTs with DL training than had the respondents. Respondents and nonresponders had the same satisfaction with the knowledge of employees who received their entry-level training via DL and would hire RTs with DL entry-level training at the same rate (Tables 5 and 6).

RESPIRATORY CARE MANAGERS' PREFERENCES REGARDING EDUCATION OF RESPIRATORY THERAPISTS

Table 1. Demographics of Respondents and Nonresponders*

	Response Categories (<i>n</i>)					Chi-square (<i>p</i>)	
	Job Title						
	Supervisor (Associate or Assistant Director) Director†			Administrator (Other)†			
Respondents	36 (36) 225			23 (41)		5.090	
Nonresponders	1 (2) 13			1 (8)		(0.024‡)	
	Respiratory Care Credentials						
	CRT	RRT		Specialty			
Respondents	27	327		107		4.169	
Nonresponders	3	20		2		(0.124)	
		Respiratory Care Education					
	OJT/Certificate/Other		1-Plus-1 or 2-Year		2-Plus-2 or Baccalaureate		
Respondents	62		177		118	1.908	
Nonresponders	7		10		8	(0.385)	
		Employment Setting					
	< 200 Beds	200–500 Beds	> 500 Beds	Extended Care	Home Care		
Respondents	129	130	71	32	38	3.679	
Nonresponders	8	8	4	1	1	(0.451)	
		Highest Academic Degree					
	Certificate or (Associate)		Baccalaureate		Masters or (Doctoral)		
Respondents	3 (87)		133		91 (5)	6.159	
Nonresponders	3 (8)		12		2 (0)	(0.046‡)	
		Prior Distance Learning Experience					
		Yes	No				
Respondents		102	235			3.771	
Nonresponders		3	22			(0.052)	

*There were 365 total respondents. Not all participants completed each category.

†The Director category was combined with the Supervisor and Assistant/Associate Director categories for this analysis because the planned analysis for the Director/Administrator pair resulted in too many cells with expected frequencies < 5.

‡*p* < 0.05 via chi-square test.

CRT = Certified Respiratory Therapist.

RRT = Registered Respiratory Therapist.

OJT = on-the-job training.

Table 2. Pairwise Comparisons of Demographics of Respondents and Nonresponders*

Degree Comparison	Chi-square (<i>n</i>)	<i>p</i>	Required <i>p</i> Value for Significance†	Significance (familywise α)
Non-baccalaureate vs graduate	6.381 (199)	0.012	0.0167	<i>p</i> < 0.05
Baccalaureate vs graduate	4.187 (243)	0.041	0.025	NS
Non-baccalaureate vs baccalaureate	0.480 (246)	0.488	0.05	NS

*Post-hoc tests using the Holm's Sequential Bonferroni Method.

†The "Required *p*-value for Significance" is included to maintain a familywise α < 0.05, because when conducting multiple statistical tests within the same data group the total α should not exceed 0.05.

NS = not significant.

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Table 3. Respondents and Nonresponders Answers Regarding Baccalaureate Degree*

	Response Category (n)			Chi-square (p)
	High	Moderate	Low	
Value of Advanced Respiratory Care Practice Major				
Respondents	266	80	11	2.292 (0.130)
Nonresponders	22	3	0	
Value of Management Major				
Respondents	192	151	17	18.063 ($< 0.001\ddagger$)
Nonresponders	7	11	6	
Value of Teaching Major				
Respondents	179	149	33	3.283 (0.194)
Nonresponders	17	7	1	
Value of Science Major				
Respondents	169	153	34	3.159 (0.206)
Nonresponders	12	8	5	
Value of Business Major				
Respondents	131	183	43	3.417 (0.181)
Nonresponders	7	11	6	
Value of Liberal Arts Major				
Respondents	22	148	186	17.356 ($< 0.001\ddagger$)
Nonresponders	7	11	7	
Prefer Entry-Level RT Who Has Baccalaureate vs Associate Degree				
Respondents	120	97	132	4.813 (0.090)
Nonresponders	7	8	3	
Prefer Hiring RT Who Has or Is Earning Baccalaureate Degree				
Respondents	252	106		12.732 ($< 0.001\ddagger$)
Nonresponders	9	16		

*There were 365 total respondents. Not all participants completed each category.

RT = respiratory therapist.

†p < 0.05 via chi-square test.

The present study's respondents did not differ geographically from the RTs reported in the national sample's 9 census regions (Table 7).¹³ Also the responding supervisors and assistant/associate directors, directors, and administrators held the Registered Respiratory Therapist,

Registered Pulmonary Function Technologist, and perinatal-pediatric credentials at a similar rate, had similar respiratory care training, and worked in similar employment settings. With regard to the highest degree held, the supervisor and assistant/associate director re-

RESPIRATORY CARE MANAGERS' PREFERENCES REGARDING EDUCATION OF RESPIRATORY THERAPISTS

Table 4. Pairwise Comparisons of Respondent and Nonresponder Answers Regarding Management and Liberal Arts Degrees*

Comparison	Chi-square (n)	p	Required p Value for Significance†	Significance (familywise α)
Management				
High vs low value	19.049 (222)	< 0.001	0.0167	p < 0.05
Moderate vs low value	8.987 (185)	0.003	0.025	p < 0.05
High vs moderate value	2.019 (361)	0.155	0.05	NS
Liberal Arts				
High vs low value	17.951	< 0.001	0.0167	p < 0.05
High vs moderate value	8.400	0.004	0.025	p < 0.05
Moderate vs low value	1.946	0.163	0.05	NS

*Calculated with post-hoc tests with Holm's sequential Bonferroni method.

†The "Required p-value for Significance" is included to maintain a familywise $\alpha < 0.05$, because when conducting multiple statistical tests within the same data group the total α should not exceed 0.05.

NS = not significant.

Table 5. Respondent and Nonresponder Answers Regarding Distance Learning vs Classroom Education*

	Response Category (n)		Chi-square (p)
	Yes	No	
Hired RTs Who Have Had Distance Learning for Entry-Level Training?			
Respondents	210	151	4.150 (0.042†)
Nonresponders	7	13	
Satisfied With Distance Learning for Entry-Level Training?			
Respondents	170	32	1.905 (0.167)
Nonresponders	6	3	
Would Hire More RTs Who Have Had Distance Learning for Entry-Level Training?			
Respondents	181	22	1.531 (0.216)
Nonresponders	6	2	

Value of Baccalaureate Completion Degree Via Distance Learning vs Classroom

	Distance Learning Has Lower Value	Distance Learning Has Equal Value (or Higher)	Uncertain About Value of Distance Learning	
Respondents	83	218 (5)	52	14.659 (< 0.001†)
Nonresponders	12	5 (1)	7	

*There were 365 total respondents. Not all participants completed each category.

RT = respiratory therapist.

†p < 0.05 via chi-square test.

spondents differed from the national sample in having more graduate degrees than degrees of ≤ 2 years duration, more baccalaureate degrees than degrees of ≤ 2 years, and more

master's degrees than baccalaureate degrees. Compared to the national sample, the present study's respondents who were directors and administrators had more associate, baccalaure-

RESPIRATORY CARE MANAGERS' PREFERENCES REGARDING EDUCATION OF RESPIRATORY THERAPISTS

Table 6. Pairwise Comparisons of Respondent and Nonresponder Answers Regarding Baccalaureate Completion Via Distance Learning Versus Via Classroom Education*

Comparison	Chi-square (<i>n</i>)	P	Required p Value for Significance†	Significance (familywise α)
Distance learning has lower value vs equal value	13.159 (328)	< 0.001	0.0167	p < 0.05
Distance learning has equal or higher value vs uncertain of value	9.550 (292)	0.002	0.025	p < 0.05
Distance learning has lower value vs uncertain of value	0.020 (154)	0.888	0.05	NS

*Calculated with post-hoc tests with Holm's sequential Bonferroni method.

†The "Required p-value for Significance" is included to maintain a familywise $\alpha < 0.05$, because when conducting multiple statistical tests within the same data group the total α should not exceed 0.05.

NS = not significant.

Table 7. Geographic Location of Study Sample Versus National Survey*

	Number of Respiratory Therapists by Census Region									Results Chi-square (p)
	East North Central	East South Central	Mid-Atlantic	Mountain	New England	Pacific	South Atlantic	West North Central	West South Central	
National Survey	1,062	512	804	335	381	920	1,130	400	956	11.941
Present Study's Sample	67	19	46	18	17	33	54	22	38	(0.154)

*There were 365 total respondents. Not all participants completed each category. The national survey data are from Reference 22.

ate, and masters degrees than degrees of ≤ 2 years (Tables 8 and 9). The majority of effect sizes for nonsignificant tests of representativeness were 0.07–0.09, which yielded 30–40% power.¹⁴

Baccalaureate Degree

The valuation of degree majors and their corresponding numbers of high value, moderate value, and low value responses (Figure 1) were:

1. Advanced respiratory care practice (high 266, moderate 80, low 11)
2. Management (high 192, moderate 151, low 17)
3. Teaching (high 179, moderate 149, low 33)
4. Science (high 169, moderate 153, low 34)
5. Business (high 131, moderate 183, low 43)
6. Liberal arts (high 22, moderate 148, low 186)

Twenty-four respondents completed the "other" degree category; they listed (number of responses in parentheses) management (5), behavioral sciences (4), clinical specialties (4), administration (2), communication (2), science (2), and computer technology (2).

Financial incentives were reported by 66 of 358 respondents (18.4%). Reported incentives came in the form of salary compensation and tuition reimbursement. Reported percentage increases in base salary (number of responses in parentheses) were: 0–5% increase (9), 6–10% increase (5),

11–15% increase (1), 21–25% increase (1), and 25–50% increase (2). Reported increases in hourly wage (number of responses in parentheses) were: < \$1.00 (4), \$1.01–1.50 (1), \$1.51–2.00 (1). Reported annual salary increases (number of responses in parentheses) were: < \$600 (1), \$1,000–2,000 (8), and \$5,000 (1).

Twenty-two respondents reported an incentive of tuition reimbursement. An additional twenty-two respondents reported receiving tuition assistance, but did not describe the specific form of compensation provided.

Two-hundred-fifty-two respondents (70.4%, $n = 358$) preferred to hire an RT who has or is working toward a baccalaureate degree. One-hundred-twenty respondents (34.4%) preferred to hire RTs who received entry-level training at the baccalaureate degree level, whereas 97 (27.8%) did not prefer the baccalaureate degree, and 132 (37.8%) registered no opinion.

Master's Degree

Respondents rated various master's degree course topics as having high, moderate, or low value. More than 50% of respondents gave high ratings to the topics of disease management, administrative issues, evaluating patient programs, advanced physiology, patient education, designing patient programs, and computer skills (Table 10).

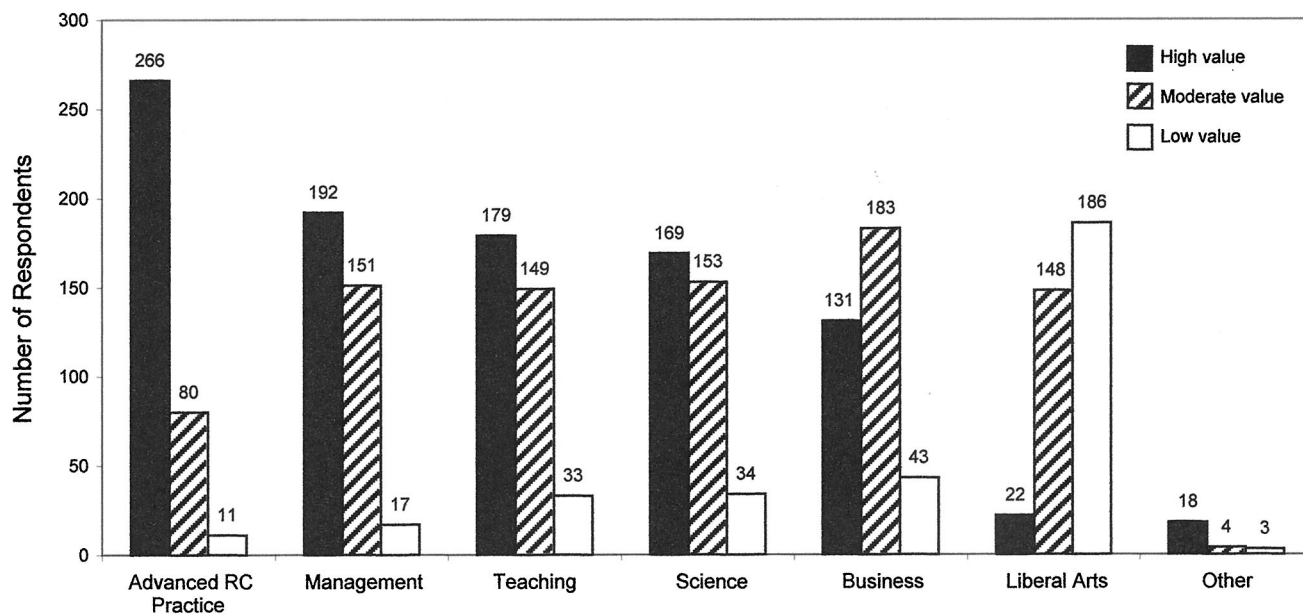


Fig. 1. Respiratory care managers value ratings of baccalaureate degree majors.

Recommended graduate degree majors fell into the general categories of (number of responses in parentheses) management (208), administration (181), liberal arts and sciences (124), education (118), and health care practice (115). An additional 100 respondents selected business, but did not specify administration or management concentrations. Similarly, 21 respondents selected public health and did not clarify an administrative or practice preference. Additionally, some respondents listed generic master's degree titles (13), *none* (10), ? (2), *it depends* (2), *uncertain* (1), and *not recommended*. (1). Respondents listed degree titles for associate degree (4), baccalaureate degree (3), National Board for Respiratory Care credentials (2), or left the response area blank (26) (Table 11).

Respondents thought that for the following jobs a graduate degree would be desirable (*n* in parentheses): manager (356), coordinator/specialist (236), educator (162), supervisor/chief RT/team leader (108), administrator (64), researcher/statistician (65), case manager (34), business (34), assistant or associate director (24), RT position (21), regulatory agency (4), and respiratory-related role (19). Some respondents did not enter a response (24), entered a "?" (2), or wrote "none" (3). The categories for coordinator/specialist, business, and nonrespiratory-care-specific roles contained many subgroups (Table 12).

Distance Learning

Compared to a baccalaureate degree earned in a traditional classroom setting, 83 respondents (22.9%) thought a DL baccalaureate degree would have a lower value, 218

(60.2%) thought a DL degree would have equal value, 9 (2.5%) thought it would have higher value, and 52 (14.4%) were uncertain. There was no correlation between respondents' DL attitude scores and how they valued RTs completing a baccalaureate degree via DL ($r = -0.098$, $p = 0.066$). Similarly, there was no correlation between respondents' prior DL experience and how they valued an RT completing a baccalaureate degree via DL ($r = 0.039$, $p = 0.48$).

Of the 360 respondents who were in positions to hire or recommend hiring RTs, 210 had hired or recommended hiring an RT whose entry-level education was primarily via DL. Of that group, 202 responded and 170 (84.2%) were satisfied with the RTs' knowledge of respiratory care and 181 of 203 (89.2%) would hire another RT whose entry-level education was primarily via DL. There were significant positive correlations between respondents' DL attitude scores and their satisfaction with the knowledge of RTs whose entry-level RT training was via DL ($r = 0.22$, $p = 0.002$) and their preferences for hiring additional RTs whose entry-level training was via DL ($r = 0.287$, $p = < 0.001$). There was no correlation between respondents' prior DL experience and their satisfaction with the knowledge of RTs whose entry-level education was via DL ($r = -0.063$, $p = 0.40$) or their preference for hiring additional RTs whose entry-level education was via DL ($r = 0.067$, $p = 0.37$).

Regarding the use of DL for graduate programs, 344 of 361 respondents (95.3%) would recommend programs that have some DL courses. Two-hundred-sixty-two of 351

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Table 8. Comparison of Demographic Data From Respondents and National Survey*

	Response Categories (n)			Chi-square (p)
<u>Professional Credentials of Supervisors and Assistant/Associate Directors</u>				
	RRT	RPFT	Perinatal/Pediatrics	
Respondents	67	10	13	0.092
National Survey	30	4	5	(0.955)
<u>Professional Credentials of Directors and Administrators</u>				
	RRT	RPFT	Perinatal/Pediatrics	
Respondents	227	23	31	2.802
National Survey	229	13	27	(0.246)
<u>Respiratory Care Education of Supervisors and Assistant/Associate Directors</u>				
	On-the-Job Training	Technician	Therapist	
Respondents	2	6	61	5.421
National Survey	8	27	102	(0.067)
<u>Respiratory Care Education of Directors and Administrators</u>				
	On-the-Job Training	Technician	Therapist	
Respondents	9	28	200	1.286
National Survey	11	22	146	(0.526)
<u>Highest Academic Degree of Supervisors and Assistant/Associate Directors</u>				
	Associate and (Some College)	Baccalaureate	Graduate	
Respondents	23 (0)	25	17	24.198
National Survey	74 (19)	40	8	(< 0.001†)
<u>Highest Academic Degree of Directors and Administrators</u>				
	< 2 Years	Associate	Baccalaureate	Graduate
Respondents	2	54	93	68
National Survey	21	54	76	37
<u>Employment Setting</u>				
	Acute Care	Extended Care	Home Care	
Respondents	330	32	38	0.430
National Survey	324	37	39	(0.806)

*There were 365 total respondents. Not all participants completed each category. The national survey data are from Reference 22.

CRT = Certified Respiratory Therapist.

RPFT = Registered Pulmonary Function Technologist.

†p < 0.05 via chi-square test.

respondents (74.6%) would recommend programs offered solely via DL. There were significant moderate correlations between the attitude-toward-DL score and recommendation of graduate programs that include some DL courses ($r = 0.40$, $p < 0.001$) and programs consisting of

all DL courses ($r = 0.48$, $p < 0.001$). In contrast, DL experience was not correlated with recommendation for graduate programs offering some coursework via DL ($r = 0.070$, $p = 0.20$) or all coursework via DL ($r = 0.022$, $p = 0.69$).

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Table 9. Results of Pairwise Comparisons for Supervisors and Administrators Between Respondents and Nonresponders*

Comparison	Chi-square (n)	p	Required p Value for Significance†	Significance (familywise α)
Supervisor or Assistant/Associate Director				
≤ 2 years vs graduate degree	23.487 (141)	< 0.001	0.0167	p < 0.05
≤ 2 years vs baccalaureate degree	7.423 (181)	0.006	0.025	p < 0.05
Baccalaureate vs graduate	6.330 (90)	0.012	0.05	p < 0.05
Director or Administrator				
≤ 2 years vs associate degree	13.218 (131)	< 0.001	0.0083	p < 0.05
≤ 2 years vs baccalaureate degree	17.387 (192)	< 0.001	0.010	p < 0.05
≤ 2 years vs graduate degree	23.933 (128)	< 0.001	0.0125	p < 0.05
Associate vs graduate degree	4.741 (213)	0.029	0.0167	NS
Baccalaureate vs graduate degree	2.531 (274)	0.112	0.025	NS
Associate vs baccalaureate degree	0.669 (277)	0.413	0.050	NS

*Calculated with post-hoc tests with Holm's sequential Bonferroni method.

†The "Required p-value for Significance" is included to maintain a familywise $\alpha < 0.05$, because when conducting multiple statistical tests within the same data group the total α should not exceed 0.05.

NS = not significant.

Table 10. Respiratory Care Managers' Value Ratings for Master's Degree Content*

Content Area	High Value n (%)‡	Moderate Value n (%)‡	Low Value n (%)‡
Disease management	273 (77.3)‡	67 (19.0)	13 (3.7)
Administrative issues	222 (62.2)‡	113 (31.7)	22 (6.2)
Advanced physiology	215 (60.6)‡	115 (32.4)	25 (7.0)
Patient education	215 (60.4)‡	120 (33.7)	21 (5.9)
Evaluating patient programs	215 (61.3)‡	113 (32.2)	23 (6.6)
Designing patient programs	204 (57.6)‡	124 (35.0)	26 (7.3)
Computer skills	200 (56.3)‡	129 (36.3)	26 (7.3)
Ventilator graphics	171 (48.3)	146 (41.2)	37 (10.5)
Advanced assisted ventilation (high-frequency, liquid)	170 (47.9)	142 (40.0)	43 (12.1)
Advanced pulmonary function testing	160 (45.1)	151 (42.5)	44 (12.4)
Research methods	147 (41.2)	145 (40.6)	65 (18.2)
Pulmonary rehabilitation	136 (38.6)	182 (51.7)	34 (9.7)
Invasive monitoring of gas exchange	136 (38.4)	170 (48.0)	48 (13.6)
Statistics	136 (38.3)	160 (45.1)	58 (16.6)
Invasive cardiac monitoring	106 (30.0)	202 (57.2)	45 (12.7)
Nutrition management (disease and wellness)	105 (29.7)	194 (54.8)	55 (15.5)
Exercise testing	98 (27.9)	203 (57.8)	50 (14.2)
Exercise prescription	90 (25.4)	196 (55.2)	69 (19.4)
Polysomnography	82 (23.3)	201 (56.8)	70 (19.8)
Cardiac rehabilitation	78 (22.2)	209 (59.4)	65 (18.5)
Hyperbaric oxygen	45 (12.8)	185 (52.6)	122 (34.7)

*There were 365 total respondents. Not all participants completed each category.

†Percentages based on total responses for each category.

‡Content areas where 50% or more respondents reported high value.

There were no significant correlations between DL attitude score and job title ($r = -0.102$, $p = 0.056$) or highest degree held ($r = 0.094$, $p = 0.088$). Of the 337 respondents who answered the question, 30 (8.9%) had prior DL experience. There was a weak positive correlation between prior DL

experience and attitude toward DL ($r = 0.12$, $p < 0.05$). Three attitude scale items showed weak positive correlations with prior DL experience: *successful-unsuccessful* ($r = 0.20$, $p < 0.001$), *interesting-boring* ($r = 0.13$, $p = 0.014$), and *creative-unimaginative* ($r = 0.13$, $p = 0.022$).

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Table 11. Recommended Master's Degree Majors*

Category (number of responses)	Subgroups (number of responses)
Management (208)	Management (110) allied health, health care, or health services (26), human resources (16), business (12), finance (8), organizational (8), accounting (6), marketing (6), quality management (6), disease management (5), outcomes (3), case management (1), time management (1)
Administration (181)	Health/hospital/medical (77), business (74), administration (generic) (19), public (11)
Liberal arts and sciences (124)	<u>Liberal Arts</u> Psychology (4), liberal arts (3), communication (2), future studies (1), medical humanities (1), philosophy (1), sociology (1) <u>Sciences</u> Science (35), physiology (25), research (14), biology (13), exercise (9), cardiopulmonary (5), statistics (4), chemistry (2), physics (2), pathophysiology (1), math (1)
Education (118)	(none)
Health care practice (115)	<u>Respiratory Care—Advanced Practice</u> Advanced practice (34), diagnostics/assessments (4), geriatrics (3), critical care (2), neonatal/pediatrics (2), rehabilitation (2), polysomnography (2), specialties (2) <u>Health-Related Professions</u> Health care/health sciences (14), nursing (12), allied health/health professions (8), physician assistant (7), computers/technology (5), information systems (4), legal (4), community health (3), wellness (2), anesthesia (1), biomedical engineer (1), case manager (1), speech pathology (1), medicine (1)
Nonspecific (121)	Business (100), public health (21)
Other (36)	Master's of science (11), advanced learning (1), anything (1), none (10), uncertain (1), “?” (2), “it depends” (2), not recommended (1), associate degree titles (4), baccalaureate degree (3), National Board for Respiratory Care credential (2)

*There were 365 total respondents. Respondents could list more than 1 item.

Table 12. Subgroups for Coordinator/Specialist, Business, and Respiratory-Related Master's Degree Roles*

Category	Subgroups (number of responses)
Coordinator/specialist (236)	Education (45), rehabilitation (25), intensive care (16), quality assurance (11), disease management (11), cardiac catheterization laboratory/cardiac testing/exercise testing (7), diagnostics (2), pulmonary function (7), sleep (6), hyperbaric oxygen (4), home care (3), equipment (2), noninvasive (1), information (1), wellness (1), protocol (1), nonspecific (99)
Business (34)	Business owner/business (14), sales or marketing (14), durable medical equipment and home care (6)
Respiratory-related (19)	Managed care (4), human resources (4), information systems (2), professional organizations (2), community health (2), bed coordinator (1), quality management (1), utilization review (1), compliance officer (1), hospital safety manager (1)

*There were 365 total respondents. Respondents could list more than 1 item.

Discussion

Baccalaureate and Master's Degrees

The present study found that 70.4% of respiratory care managers preferred to hire RTs who have or are working toward a baccalaureate degree, but that preference was less clear when considering entry-level positions. Only 34.4% of managers preferred to hire graduates from entry-level baccalaureate programs, compared to 27.8% who had no preference and 37.8% who had no opinion. These findings support the hypothesis that RT managers value baccalaureate degrees for

practicing RTs but do not view the baccalaureate degree as essential for an entry-level position.

The present study's results also support the hypothesis that managers will value the advanced respiratory care practice degree major more highly than other degree majors, for practicing RTs who complete baccalaureate degrees. Other degree categories that received numerous high value ratings were management, teaching, science, and business. The advanced practice major, however, had the greatest percentage of high value ratings (75%, compared to 54% for the next leading category, management). Placing a high value on advanced coursework within the respiratory care profession is consistent with the growing

scope of practice,^{15,16} advances in technology,^{9,17} demographic changes in population and disease,^{9,18} and recommendations for post-associate-degree training for specialty work within the profession.^{4,5} This finding provides guidance to practicing RTs who want to complete a baccalaureate degree in a subject valued by respiratory care managers.

Regarding graduate degrees, the respondents recommended master's degrees for leadership, clinical specialist, education, and research-related jobs. However, 12% ($n = 42$) of respondents questioned the value of a graduate degree, by either not responding to this question or entering a response of *none*, *?*, *it depends*, *uncertain*, or *not recommended*. The types of degree majors recommended matched the job titles in that they covered primarily management, administration, education, and health or health-science degree programs. The job roles for which respiratory care managers recommended graduate degrees are consistent with the job titles having greater proportions of graduate degrees in the 2000 AARC Human Resources Survey, which showed that RT directors, supervisors, and educators had greater numbers of graduate degrees than RTs.¹³

Graduate degree content areas rated as high value by $\geq 50\%$ of respondents were related to program management, administrative issues, advanced physiology, and computer skills. The majority of clinical topics received moderate or low value ratings. This finding is consistent with having the primary respiratory care training occurring before the graduate level. Course content areas that received high value ratings from 38–50% of respondents were advanced clinical topics and research and statistics. The research and statistics coursework would aid RTs in accomplishing the previously identified needs of increasing the science of respiratory care and disseminating information via publications.

The respondents in the present study favored baccalaureate education for experienced RTs and graduate education for RTs in leadership, clinical specialist, education, and research-related roles. Managers supported, but did not mandate, advanced degrees for RTs. The AARC also supports obtaining advanced degrees, lists baccalaureate completion degree programs on its Web page,¹⁹ and has organized a committee, the Coalition for Baccalaureate and Graduate Respiratory Therapy Education, to enhance baccalaureate and graduate programs and to aid programs interested in moving toward the baccalaureate and graduate levels.⁶ Currently, there are 47 baccalaureate respiratory care programs, in 24 states.²⁰

Support for RTs to complete baccalaureate and graduate degrees also comes from workplace incentives (increased salary or tuition assistance). There is some evidence that RTs with education beyond the associate degree level receive financial incentives. The AARC Human Resources

Survey showed that RT salaries were higher with longer academic preparation (on-the-job training, technician, and RT programs) and higher academic degrees. The AARC Human Resources Survey did not report salary comparisons between entry-level RTs graduating from associate degree programs versus baccalaureate degree programs.¹³ Recent data from the United States Census Bureau indicates that the average annual salary for individuals with baccalaureate degrees is \$14,000/year more than individuals with associate degrees. The added income from the baccalaureate degree compounds to an additional \$0.5 million when projected over a 40-year work life.²¹ Graduate education also correlates with higher salary. In the 2000 AARC Human Resources Survey, job titles such as director, educator, and supervisor consistently received higher salaries than RTs and were associated with individuals holding more baccalaureate and graduate degrees.¹³

Only 18.4% of the present survey's respondents reported financial incentive for RTs who earn or hold baccalaureate degrees. There was variability in the incentives provided, such as increased pay and tuition reimbursement. The AARC Human Resources Survey reported tuition assistance rates for hospital employees, durable medical equipment employees, and long-term-care employees that were 64%, 38%, and 55%, respectively.¹³ In contrast, the present study's findings for financial incentives were much lower. A key difference between the study populations is that the present study sampled only respiratory care managers, whereas the AARC Human Resources Survey surveyed RTs across a broader range of job descriptions. The present study's respondents' had greater numbers of advanced academic degrees, and since the respondents were managers and administrators, they may be less aware of available tuition benefits than are nonmanager RTs.

Even without a formal mandate for baccalaureate or graduate education, the education level of RTs progressed in the past decade. The percentage of RTs holding baccalaureate or graduate degrees rose from 16.1% in the 1992 AARC Human Resources Survey²² to 29.7% in the 2000 survey.¹³ The percentages of RTs holding graduate degrees rose from 2.3% to 5.7% in that same period. It is noteworthy that these advances in RT education occurred before the profession's entry-level academic requirement increased to associate degree in 2002. The present study's findings that managers value baccalaureate degrees for practicing RTs and the value they place on the advanced respiratory therapy practice degree major could further prompt RTs to complete baccalaureate degrees by clarifying degree paths valued by employers. Similarly, more RTs desiring leadership, educational, and clinical specialist roles might begin to pursue graduate degrees knowing that managers value graduate degrees for those roles.

Growth in the number of RTs with baccalaureate and graduate degrees may also impact how others perceive the

profession in the future. The income and prestige of a profession is associated with the profession's median education level.²³ Presently, RTs do not consistently receive recognition as "professionals," because the usual minimum education standard for professional recognition is the baccalaureate degree.²³⁻²⁵ Comments made on the AARC Education Section Listserv have echoed these sentiments. Parents expressed concern about their children entering a profession that does not require a baccalaureate degree. Unions for professional employees did not include RTs, because the majority of RTs lack baccalaureate degrees, and the military did not confer officer status to RTs for similar reasons. Work visas for foreign workers were more difficult to obtain for positions perceived as nonprofessional.²⁶ Regarding reimbursement, the Centers for Medicare & Medicaid Services (formerly the Health Care Financing Administration) did not initially reimburse services provided by RTs, because the profession does not require a baccalaureate degree. After a lobbying effort by the AARC that decision was reversed, and RTs are now eligible for reimbursement.²⁵ Knowledge of managers' support for advanced degrees might influence more RTs to pursue these degrees and impact the profession's image in the process.

Distance Learning

Practitioners need to have advanced degree programs that address the needs of working adults.^{27,28} Programs need to consider that most working adults want part-time programs and need to balance family responsibilities with school.²⁸ The advanced degree programs should have mechanisms to provide credit for prior educational coursework and life experience.²⁹ Furthermore, programs need to offer coursework at times when practitioners are available.²⁸ DL offers flexibility in learning time and place.³⁰ Individuals with greater family and work responsibilities use DL courses more than individuals with fewer family and work responsibilities.³¹ However, a prior study found that RTs did not know how their managers viewed degrees earned via DL.¹¹

The present study did not fully support the hypothesis that managers would value baccalaureate and master's degrees earned via DL. Sixty-three percent of managers thought a DL baccalaureate completion degree would have the same (or higher) value as a degree earned in a traditional classroom setting, but 23% of managers thought a DL degree less valuable. An overwhelming majority of respondents who had hired RTs whose entry-level education was via DL gave positive ratings for the RTs' knowledge and supported hiring additional RTs with DL entry-level education. The AARC also supports the use of DL for advanced practitioners. All 4 baccalaureate completion programs listed on the AARC Web site offer DL courses.

es.¹⁸ Furthermore, the AARC offers DL programs for continuing respiratory care education units.³²

Respiratory care managers viewed DL more positively for graduate degrees than for baccalaureate completion degrees. Managers supported using all DL courses for graduate programs but gave more support for programs that held some courses on campus. These findings align with recommendations in the DL literature that DL works best for more mature learners.³³

Attitude toward DL had a slightly positive correlation with the respondents' future decisions to hire RTs with DL entry-level education and the knowledge of prior employees with DL entry-level education. The questions asked in the present survey could not differentiate whether the experience of working with DL-trained RTs influenced the respondents' attitudes toward DL or if, conversely, their attitudes toward DL colored their assessments of DL-trained RTs.

There was a moderately positive correlation between attitude toward DL and the respondents' recommendations for incorporating DL courses into graduate level degrees. However, attitude toward DL did not influence the degree to which respondents valued completing baccalaureate degrees via DL. DL attitudes were also independent of job title and highest held academic degree.

Only 30 managers (8.9% of respondents who answered this question) reported prior DL experience. There was a slightly positive correlation between prior experience with DL and attitude toward DL. There was also a weak positive correlation between prior DL experience and items on the DL attitude scale, which indicated that respondents who had prior DL experience thought DL was more successful, interesting, and creative than did respondents who did not have DL experience. None of the other comparisons of prior DL experience and baccalaureate and graduate education were significant. Readers need to interpret these results cautiously, however, because of the limited number of respondents with prior DL experience. In addition, the dates that the respondents took their DL courses and their DL course designs may have affected their perspectives. DL has undergone numerous changes in the past decade. The proliferation of the Internet has enabled relatively easy access to rapid connections with other students and instructors.³⁴ This evolution of technology alleviated the slow feedback and lack of student interaction associated with correspondence courses, an earlier form of DL.³⁰ Perspectives on DL using electronic technology might impact future managers' opinions. Also some people confuse DL providers with "diploma mills" (organizations that confer diplomas without providing education).³⁵ To combat that problem, individuals can search the Council for Higher Education Accreditation's Web site to identify programs that meet legitimate accreditation standards.³⁶

Changes in the quality of teaching among DL educators might also affect how managers perceive DL. Growth of

programs to train educators how to effectively use DL occurred only recently.³⁷ Another recent shift in program delivery is the move toward hybrid courses, which combine the advantages of classroom learning and DL.³⁸ These changes in DL and the work performance of DL program graduates may also influence managers' future opinions.

Limitations

This survey's 26% response rate may not have represented the diversity of views held throughout the entire population of respiratory care managers, so the data were compared to data from the 2000 AARC Human Resources Survey to determine the sample's representativeness of the national RT population. The comparison groups that yielded nonsignificant differences all had power levels below 40%, which prevents confirmation of similarity between the respondents and the broader population. However, the comparison groups also yielded effect sizes < 0.1 , which implies there is little difference between the groups.¹⁴ Given the small effect sizes, I believe the present study's sample is relatively representative of the national population.

Compared to the nonresponders, the respondents had more undergraduate and graduate degrees, fewer administrative positions, fewer ratings in the high and moderate categories for recommending liberal arts and management degrees, and were more willing to hire an RT who holds or is working toward a baccalaureate degree. Respondents were also more willing to hire practitioners whose entry-level education was via DL and valued DL education more than nonresponders. Respondents and nonresponders were similar with regard to professional credentials, respiratory care education, size and type of facility, prior DL experience, and values placed on the majority of baccalaureate degree majors.

Respondents in the present study were similar to those in the 2000 AARC Human Resources Survey¹³ with regard to geographic location, professional credentials, respiratory care education, and work setting. The present study's respondents had more education than those in the AARC study, which limits interpretation of the present study's results.

In the present study the zip code information was taken from return envelopes, and envelopes lacking a postmark were excluded from analysis, which may have biased the results.

Other limitations of the present study are that it provided no comparison between respondents and nonresponders regarding graduate degree questions, and that other researchers might categorize and report the graduate degree majors and job titles in slightly different categories. Furthermore, this study reports descriptive data that represent managers' values of specific degrees. We cannot infer the percentage of practicing RTs who ought to hold

undergraduate or graduate degrees nor that the education standard for entry-level credentials should change. In addition, the graduate education results do not indicate which recommended degree majors to select for individual job titles. Only a small percentage of respondents (8.9%) had personal experience with DL, so the strength of inferences resulting from correlations regarding DL experience is also limited.

Conclusions

Respiratory care managers value baccalaureate and master's degrees earned by practicing RTs but do not think of those degrees as essential for all RTs. Managers prefer hiring experienced RTs with baccalaureate degrees over associate degrees, but they did not express a preference for entry-level RTs to have baccalaureate degrees. Respiratory care managers valued the advanced respiratory care practice degree major for baccalaureate completion most highly, over completion of degrees in management, teaching, science, business, and liberal arts. Graduate degrees are supported for RTs working as managers, educators, supervisors, and clinical specialists with degree majors consistent with those job titles.

Managers gave mixed support for RTs who earn baccalaureate and master's degrees via DL. Regarding baccalaureate completion degrees 62.7% of managers valued a DL baccalaureate completion degree as much as or more than a classroom degree, 22.9% valued a DL degree less, and 14.4% were uncertain. The majority of managers who hired RTs with DL entry-level preparation were satisfied with the RTs' knowledge and skills. The respondents showed more acceptance of graduate education via DL, although they gave greater support to graduate programs that include some classroom study, rather than all coursework via DL. However, their limited personal experience with DL might not have taken into account the recent improvements in DL, and those improvements might affect managers' future attitudes.

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Appendix 1

Manager's Views Towards Respiratory Education

- ◆ This survey will help clarify managers' views on pre- and post-professional education.
- ◆ It takes approximately 15 minutes to complete.
- ◆ Please return your completed survey by December 15, 1999.

Questions about baccalaureate degrees

1.0 Would you give preference to hiring a respiratory care practitioner who is working toward or holds a baccalaureate degree?
 yes no

2.0 Does your facility provide financial incentives for respiratory care practitioners who earn or hold a baccalaureate degree?
 yes no

2.1 If yes, what is average amount of the incentive?

3.0 Please rate each of the following with the response that best indicates your value of the baccalaureate degree major for respiratory care practitioners. The definitions corresponding to the numbers 1-3 are listed below. You may use each value more than once.

1 = high value 2 = moderate value 3 = low value

- | | |
|---|--|
| <input type="checkbox"/> Business | <input type="checkbox"/> Science |
| <input type="checkbox"/> Management | <input type="checkbox"/> Liberal Arts |
| <input type="checkbox"/> Teaching | <input type="checkbox"/> Advanced Practice (in Respiratory Care) |
| <input type="checkbox"/> Other (please specify) _____ | |

Some of the following questions address distance learning. Please use the following definition of distance learning when you answer these questions:

Distance learning is a teaching method where students don't need to regularly attend classes on campus. Students may get their course content sent through the mail as written material, video tapes, or audio tapes; presented over an audio-teleconferencing, satellite, or television network; or sent through computer networks. Often a combination of methods is used for each course. Students communicate with their teachers and fellow classmates through private telephone conversations, teleconferences, computer messages, and the postal system. Many educational institutions from small private colleges to major universities offer degrees through distance learning.

4.0 How would you value a baccalaureate-completion degree for practicing respiratory care professionals earned primarily through distance learning, compared to one earned in the classroom? (check only one)

- A baccalaureate degree earned through distance learning would have lower value.
- The baccalaureate degrees earned through either distance learning or classroom teaching would have equal value.
- A baccalaureate degree earned through distance learning would have higher value.
- I am uncertain about how I would value a degree earned through distance learning.

Hiring decisions

5.0 Are you or have you ever been in a position where you could hire or recommend hiring respiratory care practitioners?
 yes no

If yes, go to question 5.1. If no, go to question 6.0.

5.1 Have you hired or recommended hiring a respiratory care practitioner who received his/her pre-professional education primarily through distance learning?

- yes no
- If yes, go to question 5.11. If no, go to question 5.2.

5.11 Were you satisfied with this employee's knowledge of respiratory care?
 yes no

5.12 Would you hire another employee who received his/her pre-professional education primarily through distance learning?
 yes no

5.2 Do you prefer to hire individuals who received their pre-professional education at the baccalaureate degree level vs associate degree level?

- yes no no opinion

(continued)

