



Grade Inflation and Entry-level Radiologic Sciences Programs: A Pilot Study

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Abstract

Grade inflation is defined as an increase in the number of “A” grades being awarded to students and the numbers of As and Bs being awarded versus the numbers of Cs, Ds, and Fs being awarded. This may lead to students who possess the grades to graduate but may not possess the skill to demonstrate content mastery. Consumerism, vague/no grading standards, time pressures, conflict avoidance, and administrative pressures have been blamed for this trend. Implications of grade inflation are particularly concerning for health sciences and human services professions. If graduates of these programs lack the skills necessary to perform, they may place patients in life-threatening situations. Because no studies exist in radiologic sciences related to grade inflation, this pilot study was conducted to determine if grade inflation is a concern among entry-level radiologic science program educators. Six-hundred and four entry-level programs accredited by the Joint Review Committee on Education in Radiologic Technology (JRCERT) were contacted via email to disseminate the SurveyMonkey link to their faculty; 312 participants completed the anonymous survey that gathered demographic data and specific data related to grade inflation in higher education and entry-level radiologic science programs. Descriptive statistics was used to analyze the data, and the results of this pilot study indicate entry-level radiologic science program educators are not concerned about grade inflation in their programs or in higher education. However, a major limitation of the study was noted that leads the investigator to recommend other grade inflation studies be conducted: many of the respondents were program directors/chairs, and educator didactic and clinical roles may have been underrepresented. Didactic and clinical educators should be the primary targets of future studies, and a mixed methods approach should be considered to investigate educators’ perceptions of grade inflation. The literature overwhelmingly supports grade inflation in health sciences and human services programs is a trend; study into this concern related to radiologic science programs should be continued.

Introduction

Grade inflation has been defined in two ways: an increase in the numbers of As and Bs awarded versus the numbers of Cs, Ds, and Fs awarded¹ and as a steady

increase in “A” grades without the same increase in skill acquisition.^{2,3,4} Grade inflation has been an ongoing concern in higher education for the past 45 years, beginning with the Vietnam War when it appears the practice began in high schools as an effort to keep some young men out of the draft; the higher the grades in high

school, the more assurance there was these young men would go to college instead of to Vietnam.^{5,6} Some researchers have reported grade inflation as merely grade elevation which boosts students' self-esteem.^{7,5,6} Other researchers have reported multiple causes of grade inflation such as consumerism, vague/no grading standards, time pressures, conflict avoidance, and administrative pressures.^{8,4,9-13} Whether or not one examines grade inflation or grade compression as concerns, ramifications for both have been noted. Paskausky and Simonelli¹⁴ noted higher grades during nursing clinical rotations did not always correspond with final exam pass rates; they revealed a discrepancy between grades and skills may have negative repercussions for patients. Concerns regarding higher grades not correlating with achieved skills have also been reported among medical school students,^{9,15} athletic training students,^{16,10} and social work students.¹² Overall, when students achieve high grades but lack the skill sets for their professional careers, they may place patients' lives at risk.

The radiologic sciences profession is omitted from the overview of existing literature, because no research has been conducted to determine if grade inflation exists in this profession. To begin to address this gap, the current study was conducted to determine if grade inflation is a concern among entry-level radiologic science program educators.

Methodology

Study design

This study was conducted as a pilot study to collect data to determine if radiologic science educators perceive grade inflation exists in entry-level radiologic science programs. Percentages for each question were examined, and based on the results, future studies may be conducted to interpret the data for significant trends in radiologic sciences. The study was approved by Midwestern State University's IRB committee (IRB #17071001).

Recruitment and sample

The participants for this study were radiologic science educators teaching in Joint Review Committee on

Education in Radiologic Technology (JRCERT)-accredited programs across the United States. A request for a list of program educators was made to the JRCERT, and a list of 604 accredited program directors was obtained. An email with a Survey Monkey link was sent to all 604 accredited program directors with a request to participate in and disseminate the survey to their faculty. A narrative explaining the purpose of the study, a definition of grade inflation, an assurance of anonymity, and an explanation of no compensation was included with the survey link. There were no restrictions for participation based on age, length of service, race/ethnicity, institutional employment, or program level. Participants were notified in the narrative they could withdraw (not complete the survey) at any time without repercussion. The investigator left the survey open for approximately four weeks, and two weeks after the original email was sent requesting participation, a follow-up email was sent out.

Five-hundred and twenty surveys were begun, and 340 surveys were submitted. If more than two questions were not answered, surveys were considered incomplete; 28 surveys were determined to be incomplete and omitted from the final percentages. Three-hundred and twelve surveys were completed, indicating a return rate of 60%. When the survey link was sent, the researcher received 16 returned emails (either undeliverable or out of office notifications). Two weeks after sending out the original request for participation, a second email was again sent to program directors asking for participation. Another 12 emails returned as either undeliverable or out of office notifications. Although approximately 100 more respondents submitted the survey, receiving undeliverable/out of office notifications may have contributed to the possible underrepresentation of didactic and clinical faculty.

Questionnaire

No original research studies have been conducted investigating educators' perceptions of grade inflation in entry-level radiologic sciences programs; to address educator perceptions of this phenomenon, permission was obtained to use and adapt a validated survey from Fazio et al. (2013). Fazio et al. (2013) validated their survey questions through a process whereby the Clerkship Directors in Internal Medicine (CDIM) placed

a call for survey questions, and the survey committee reviewed and revised them.

Several demographic questions were added to the adapted survey (See Table 1).

Table 1 – Demographic Information

Gender		Total responses	Percentages
	Female	229	73
	Male	76	24
	Prefer not to answer	7	2
	Total	312	100
Position Title		Total responses	Percentages
	Other	89	28
	Instructor	81	26
	Assistant Professor	52	17
	Full Professor	47	15
	Associate Professor	43	14
	Total	312	100
Position duties		Total responses	Percentages
	Chair/ Program Director	132	43
	Combination didactic/ clinical	27	9
	Chair/Program Director; Combination didactic/clinical; Combination online/Face-to-face	25	8
	Chair/Program Director; Combination didactic/clinical; Face-to-face only	21	7
	Chair/Program Director; Didactic only; Face-to-face only	20	6
	Combination didactic/ clinical; Combination online/ Face-to-face	17	6
	Combination didactic/clinical; Face-to-face only	12	4
	Clinical only	9	3
	Chair/Program Director; Didactic only; Combination online/Face-to-face	8	3
	Chair/Program Director; Combination didactic/clinical	7	2
	Chair/Program Director; Didactic only	7	2
	Didactic only; Face-to-face only	6	2

	Didactic only; Combination online/ Face-to-face	4	1
	Didactic only	4	1
	Chair/Program Director; Combination online/ Face-to-face	2	1
	Chair/Program Director; Didactic only; Combination didactic/clinical	2	1
	Chair/Program Director; Face-to-face only	2	1
	Clinical only; Face-to-face only	1	0
	Didactic only; Clinical only; Combination didactic/clinical; Online only; Face-to-face only; Combination online/ Face-to-face	1	0
	Didactic only; Online only	1	0
	Combination online/ Face-to-face	1	0
	Chair/ Program Director; Online only	1	0
	Chair/Program Director; Combination didactic/clinical; Online only; Face-to-face only	1	0
	Total	311	100
 			
Type of Institution		Total responses	Percentages
	Community college	140	45
	4-year university/college	85	27
	Hospital-based	55	17
	Technical/ trade school	32	10
	Total	312	100
 			
Degrees offered		Total responses	Percentages
	Entry level Associate Degree in Radiography	178	57
	Hospital-based certificate	38	17
	Entry level Bachelor Degree in Radiography	12	5
	Total	228	79
 			
Age	N=312	Average - 50	
Years Teaching	N=312	Average - 17	

The survey questions were tailored to examine perceptions of grade inflation in higher education, radiologic sciences programs in general, and participants' programs as related to other radiography

programs (See Table 2). Participants selected their responses from two Likert-type scales: one scale with "a serious problem", "a somewhat serious problem", "neutral", "probably not a big problem", and

“definitely not a big problem” and one scale with “strongly agree”, “agree”, “neutral”, “disagree”, and “strongly disagree”. Before the survey was sent to program directors for dissemination, it was peer-

reviewed by several colleagues of the investigator and edited for clarity.

Table 2 – Perceptions of Grade Inflation

Q1	Select the statement best describing your perceptions about grade inflation in higher education.	Total responses	Percentages
	A serious problem.	53	17.0
	A somewhat serious problem.	127	40.7
	Neutral	82	26.3
	Probably not a big problem.	42	13.5
	Definitely not a big problem.	8	2.6
	Total	312	100
Q2			
Q2	My perception is grade inflation exists in the radiography program at my institution.	Total responses	Percentages
	Strongly Agree	13	4.2
	Agree	83	26.6
	Neutral	33	10.6
	Disagree	121	38.8
	Strongly Disagree	62	19.9
	Total	312	100
Q3			
Q3	My perception is grade inflation is more of a problem in other professional programs at my institution than in my radiography program.	Total responses	Percentages
	Strongly Agree	13	4.2
	Agree	54	17.3
	Neutral	161	51.6
	Disagree	73	23.4
	Strongly Disagree	11	3.5
	Total	312	100
Q4			
Q4	In my radiography program, students have passed the didactic components of the program who should have failed.	Total responses	Percentages
	Strongly Agree	20	6.4
	Agree	70	22.4

	Neutral	22	7.1
	Disagree	122	39.1
	Strongly Disagree	78	25.0
	Total	312	100
Q5	In my radiography program, students have passed the clinical components of the program who should have failed.	Total responses	Percentages
	Strongly Agree	28	9.0
	Agree	108	34.6
	Neutral	27	8.7
	Disagree	104	33.3
	Strongly Disagree	45	14.4
	Total	312	100
Q6	Select the statement best describing your perceptions about grade inflation in radiography education.	Total responses	Percentages
	A serious problem.	31	9.9
	A somewhat serious problem.	114	36.5
	Neutral	82	26.3
	Probably not a big problem.	67	21.5
	Definitely not a big problem.	18	5.8
	Total	312	100

Data analysis

Descriptive statistics were used to determine if further study regarding grade inflation in radiologic sciences was warranted. Data collected from the survey were exported to EXCEL for analysis. Percentages were calculated to summarize basic perceptions of the existence of grade inflation.

Demographics

The majority of participants (N=312) in this study were females (73%), with males representing 24% of the participants, and those who preferred not answer making up the final 2% of respondents. The

average age of the group was 50 (N=312), and the average number of years teaching was 17 (N=312). Other demographic information regarding race/ethnicity was collected but was deemed not relevant for this study and therefore, was not included.

Participants were asked to note their position titles, and 72% of participants listed either instructor, assistant professor, full professor, or associate professor. Twenty-eight percent listed themselves under “other” titled positions. For position duties, participants were able to choose more than one response. It should be noted only 311 participants chose to answer this question. Of that number, approximately 42% (n=132) reported they were

responsible for only chair/program director duties. Twenty-seven percent (n=83) reported multiple teaching duties (none as chair/program director), and 31% (n=96) reported being responsible for the chair/program director duties as well as multiple teaching roles.

Community college faculty represented 45% of the participants (N=312), with 27% representing 4-year institutions, 17% representing hospital-based programs, and 10% representing technical/trade school settings. For degrees offered, the purpose of this study was to investigate grade inflation perceptions in institutions' entry-level programs. Out of 228 responses included in the analysis, 57% (n=178) reported having the entry-level associate degree, 17% (n=38) reported having the entry-level hospital-based certificate, and 5% (n=12) reported having the entry-level bachelor degree.

Results & Findings

From Q1 (grade inflation in higher education), a total of 160 (57.7%) respondents felt grade inflation in higher education was either a serious or somewhat serious problem, while a total of 50 (16.1%) respondents felt grade inflation in higher education was either probably not a big problem or definitely not a big problem. Eighty-two (26.3%) of the respondents were neutral about grade inflation in higher education. Q2 (grade inflation exists in the radiography program at my institution) gleaned 96 (30.8%) respondents reporting they either strongly agreed or agreed grade inflation exists at their institutions, while 183 (58.7%) either disagreed or strongly disagreed with the statement. Thirty-three (10.6%) reported being neutral toward grade inflation existing in their programs. Sixty-seven (21.5%) respondents agreed or strongly agreed with Q3 (grade inflation was more of a problem in other professional programs than in their radiography program at their institution). Eight-four (26.9%) disagreed or strongly disagreed with this statement, while 161 (51.6%) were neutral in their responses.

Two questions asked participants to identify if there were students who passed didactic and clinical portions of their programs who should have not passed. Ninety (28.8%) respondents agreed or

strongly agreed that some students had passed the didactic portion of their entry-level programs and should have failed (Q4), while 200 (64.1%) disagreed or strongly disagreed with this statement. Twenty-two (7.1%) were neutral toward this question. Regarding Q5, students passing clinical who should have failed, 136 (43.6%) respondents agreed or strongly agreed, and 149 (47.7%) participants disagreed or strongly disagreed with this statement. Twenty-seven (8.7%) chose neutral for this statement.

The final question (Q6) asked participants to determine the seriousness of grade inflation in radiography education. One-hundred and forty-five (46.4%) identified grade inflation as a serious or somewhat serious problem, while 85 (27.3%) reported it was probably not or definitely not a big problem. Eighty-two (26.3%) respondents were neutral toward the seriousness of grade inflation.

The purpose of this study was to determine if radiologic sciences educators hold the view that grade inflation exists in entry-level radiography programs. Overwhelmingly, it appears radiologic science educators do not believe grade inflation is a concern in entry-level programs.

Of the 312 respondents, 183 reported grade inflation did not exist in their radiography programs, and another 33 were neutral about grade inflation existing in their programs. Taking these respondents at face value could lead to the conclusion most radiography educators are not concerned about grade inflation.

When responding to whether they believe grade inflation is higher in other professional programs versus their entry-level radiography programs, respondents were almost evenly divided. Approximately 22 % felt grade inflation was higher at other institutions versus their own, and approximately 27% felt grade inflation was higher in their professional program versus other institutions. The other 52% reported as neutral, which again could lead to the conclusion a little over half of radiography educators are not concerned with grade inflation.

When asked if some students passed the didactic and clinical portions of their programs who should

have not passed, respondents reported students who passed had the skills to do so. Approximately 64% and approximately 48% of respondents felt students should have passed the didactic and clinical components of their programs, respectively, indicating no grade inflation, which falls in line with the data reported in the previous question. Approximately 29% and 44% of the respondents felt some students should not have passed the didactic and clinical components of their programs, respectively; this is an indicator some grade inflation (for whatever reason) exists in entry-level programs. Sixteen percent of the respondents were neutral about students passing both components of their programs who should not have passed. In examining just these percentages, grade inflation may not be an issue for most entry-level programs.

The final overarching question asked respondents to determine how serious grade inflation is in entry-level radiography programs. Even though 46% reported grade inflation as serious or somewhat serious, another 27% labelled it as probably not or definitely not a serious problem, and the final 26% of respondents reported in as neutral. These last two percentages again seem to indicate radiography educators do not find grade inflation to be of much, if any, concern.

These results seem to refute the notion grade inflation in entry-level radiography programs exists enough to be a serious concern. Results from other health sciences and human services professions, however, present grade inflation as a concern, especially related to professional practice ramifications. The investigator of this pilot study feels it prudent to continue to examine grade inflation in entry-level radiography programs, as discussions with peers, especially in the clinical setting, seem to indicate grade inflation may be an issue.

Limitations

There were several limitations to be noted. The original intent was to access all educators in JRCERT-accredited radiography programs via email. Unfortunately, due to time constraints, the researcher had access to only program directors and had to rely on them to disseminate the survey link to their

faculty. Even though a return rate of 60% was achieved, based on job description, it appeared mainly program directors completed the survey; educators in primarily didactic and clinical faculty positions may be underrepresented. As such, surveys for follow-up studies should be sent directly to faculty and program directors.

Several demographic questions allowed respondents to choose multiple titles and job descriptions. A more appropriate format for more streamlined data collection may be asking respondents to “Choose the statement which best reflects your current job title” and “Choose the statement which best reflects your job duties.” For data collection regarding age and number of years teaching in the profession, it would be prudent to have respondents choose from a drop-down menu or request responses in whole years, as some respondents typed ambiguous text comments and added a plus sign (+) to indicate they were between years, in both age and teaching.

Another limitation was the study design itself: descriptive statistics to determine if radiologic science educators perceive grade inflation as a problem. A more appropriate design for follow-up studies would be a mixed methods design, allowing for educators to express their feelings about grade inflation in general and more specifically to entry-level radiography programs. This process would allow the researcher to gain a better understanding about why educators hold the feelings they do about the existence or non-existence of grade inflation. A mixed methods design may also provide insight regarding best practices for addressing any perceived grade inflation concerns.

Conclusions

The limitations noted above have led the researcher to conclude further investigation into grade inflation in entry-level radiography programs should be continued. Because it appears both didactic and clinical faculty are under-represented in this study, further research with the modifications noted above could glean a more complete representation of grade inflation concerns.

From the limited data gathered in this study, it appears grade inflation is not a concern among the program directors in entry-level radiologic sciences programs. However, because radiologic science educators and clinical staff are the gatekeepers of the profession, and there is support grade inflation exists in general higher education^{5, 7, 9} and other allied health professions, ^{3,8, 10-14} further study into this possible continuing trend is warranted.

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