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A Cross-Sectional Survey of Research Involvement and Interest among Graduate Dietetics Students

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Cover Page Footnote

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A Cross-Sectional Survey of Research Involvement and Interest among Graduate Dietetics Students

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ABSTRACT

- **Background:** Dietitians are not frequently participating in or leading research. Cultivating greater research interest and involvement starts with dietetics education, but little is known about dietetics students' research involvement and interest. This study examines relationships between research involvement and interest among graduate dietetics students.
- **Methods:** This study was a cross-sectional survey design incorporating participant characteristic data, the Practice-Based Dietitian Research Involvement Survey (PBDRIS), and the modified Interest in Research Questionnaire (IRQ) tools; 89 of 327 (27.2%) graduate dietetic students from 3 US universities were included. Participant characteristics, PBDRIS scores, and IRQ scores were analyzed using descriptive statistics. Relationships between variables were analyzed using Kruskal-Wallis test, one-way ANOVA, and Spearman correlation depending on data distribution.
- **Results:** Among participants, the median age was 35.0, 92.5% were female, and 70.8% were registered dietitians. The mean PBDRIS total score was 47.4 ± 10.9 , and the median IRQ score was 66.0 (56.0, 75.0). Post-professional doctorate students had a significantly higher PBDRIS total score than pre-professional master's students ($P=0.002$). There were significantly higher median IRQ scores among post-professional master's and doctorate students than pre-professional master's students ($P<0.001$ and $P=0.004$, respectively). A moderate, positive correlation was found between PBDRIS total score and IRQ score ($P<0.001$).
- **Conclusion:** Research involvement is higher in post-professional doctorate students than in pre-professional master's students. Research interest is higher in post-professional master's and doctorate students compared to pre-professional master's students. The pre-professional dietetics research curriculum should be strengthened to cultivate research interest and involvement.

KEYWORDS

Research involvement, research interest, dietetics education

INTRODUCTION

Research is foundational to evidence-based practice (EBP), a key competency for all health care professionals (HCPs).^{1,2} Evidence-based practice depends on research to discover and inform interventions while also considering patient and family preferences and HCPs' experience.¹⁻³ The body of research informing clinical practice should constantly evolve and relies on HCPs to identify knowledge gaps and be involved in the research process to address these gaps. Registered Dietitians (RDs) are involved in research,² and different models have been developed to describe this involvement. Wylie-Rosett et al. published the 4-level continuum of research involvement in 1990.⁴ Levels of research involvement were described as research integration into practice at Level 1; translating research into guidelines, publications, and mentorship at Level 2; research participation at Level 3; and research leadership at Level 4.⁴ Although RD research involvement and growth through the research continuum are recognized as vital for EBP in dietetics, research involvement among RDs in clinical practice remains at only the practice and translational levels.^{5,6} Clinical RDs are rarely or never involved in the higher research involvement activities of participation or leadership.^{5,6}

Many barriers to research involvement have been identified, including limited research skills and a lack of research interest.^{5,7-11} Up to 44% of RDs report a lack of research interest as at least a minor barrier to research involvement.^{7,10,11} Strategies to increase research knowledge, skill, and interest during dietetics education may facilitate later research involvement as dietetics students have shown positive attitudes towards research involvement.¹²

The Accreditation Council for Education in Nutrition and Dietetics (ACEND) identifies research as a key competency in pre-professional dietetic education including didactic programs in dietetics, dietetic

internships, and the Future Education Model (FEM) for graduate degree programs.¹³⁻¹⁵ This competency includes involvement at all stages of research: designing a study, collecting, analyzing, and synthesizing data, as well as disseminating findings.¹³⁻¹⁵ In the ACEND FEM for graduate degree programs, research-related competencies are highlighted as advanced skills and can be demonstrated via conducting a research study.¹³ An ACEND expectation of graduate-level dietetics education is that graduating RDs can lead or participate in research and program evaluation.¹⁶ This research participation and leadership is then reflected in the Academy of Nutrition and Dietetics' performance standards where RDs are involved in the creation of knowledge to advance evidence-based dietetics practice.¹⁷

While improving research knowledge via formal education has been identified as a facilitator of research involvement,⁸ there is a lack of representation from students, particularly at the graduate level, in published studies that quantify research involvement.^{5,6,11,18-21} A better understanding of the relationships between research interest and involvement among graduate dietetics students could guide future changes to curricula. This study compares research involvement and interest among students enrolled in pre- and post-professional master's programs and post-professional doctorate programs. It also examines relationships between research involvement and interest among graduate dietetics students.

METHODS

This study was a cross-sectional, electronic, survey design delivered via Qualtrics to graduate dietetics students from three public

Table 1. Demographic, Educational, and Professional Characteristics of Graduate Dietetics Students

	Total Sample n (%)	Pre-Professional Master's n (%)	Post-Professional Master's n (%)	Post-Professional Doctorate n (%)
Total	89 (100.0)	26 (29.2)	16 (18.0)	47 (52.8)
Ethnicity (n=89)				
Non-Hispanic	79 (88.8)	24 (92.3)	15 (93.8)	40 (85.1)
Hispanic	9 (10.1)	2 (7.7)	1 (6.3)	6 (12.8)
Prefer Not to Answer	1 (1.1)	0	0	1 (2.1)
Race (n=88)				
Asian	12 (13.6)	6 (23.1)	2 (12.5)	4 (8.7)
Black	4 (4.5)	1 (3.8)	0	3 (6.5)
Multiracial	2 (2.3)	0	1 (6.3)	1 (2.2)
White	68 (77.3)	18 (69.2)	13 (81.3)	37 (80.4)
Other	1 (1.1)	1 (3.8)	0	0
Prefer Not to Answer	1 (1.1)	0	0	1 (2.2)
Gender Identity (n=89)				
Male	7 (7.9)	1 (3.8)	2 (12.5)	4 (8.5)
Female	82 (92.1)	25 (96.2)	14 (87.5)	43 (91.5)
Highest Degree Achieved (n=89)				
Bachelor's	43 (48.3)	25 (96.2)	16 (100.0)	2 (4.3)
Master's	46 (51.7)	1 (3.8)	0	45 (95.7)
Percent of Program Completed (n=89)				
<50%	40 (44.9)	12 (46.2)	4 (25.0)	24 (51.1)
≥50%	49 (55.1)	14 (53.8)	12 (75.0)	23 (48.9)
Current RD Credential (n=89)				
Yes	63 (70.8)	0	16 (100.0)	47 (100.0)
No	26 (29.2)	26 (100.0)	0	0
Employment Setting ^{a,b} (n=63)				
Acute/inpatient care	21 (33.3)		8 (50.0)	13 (27.7)
Ambulatory/outpatient care	11 (17.5)		5 (31.3)	6 (12.8)
Educator	11 (17.5)		0	11 (23.4)
Private practice	3 (4.8)		0	3 (6.4)
Research	3 (4.8)		0	3 (6.4)
Other	14 (22.2)		3 (18.8)	11 (23.4)
	Median (IQR^c)	Median (IQR^c)	Median (IQR^c)	Median (IQR^c)
Years Employed as RD ^a (n=62)	11.5 (5.8, 21.0)		9.0 (3.0, 16.0)	12.0 (7.0, 22.0)
Age (years) (n=86)	35.0 (24.8, 44.0)	23.0 (23.0, 25.5)	36.5 (26.3, 43.8)	39.0 (33.5, 51.0)

IQR: interquartile range; RD, Registered Dietitian

^a among participants who reported having the RD credential

^b other practice settings include long-term/extended care, community/public health, student, school nutrition, dietetic internship management, industry, sports/performance, home care, retail, and retired

^c IQR expressed as quartile 1, quartile 3

universities in the United States (U.S.). Annual enrollment in these universities' health professions schools ranges from 1800 to 4000 students. The study was designed based on Dillman's Tailored Design Method.²² Ethics approval was received from Rutgers University Newark Health Sciences Institutional Review Board (Study ID: Pro2022000561).

Study Population and Sampling Plan

Using non-probability, purposive sampling, 327 students from Rutgers University, the University of North Florida, and the University of Kansas Medical Center were sent an email invitation with a link to the electronic survey in July 2022. This initial email communication was followed by up to three reminder emails over 28 days. These universities were chosen as they offer a Doctor of Clinical Nutrition (DCN) program in addition to Master of Science programs for both pre-professional and post-professional students.

Participants were included if they were a graduate dietetics student enrolled in either a Master of Science or DCN program and were 18 years or older at the time of the survey. Participants were excluded if they were enrolled in a PhD program or provided incomplete answers to both the Practice-Based Dietitian Research Involvement Survey (PBDRIS) and Interest in Research Questionnaire (IRQ) tools. Participants were categorized as pre-professional master's students, post-professional master's students, and post-professional doctorate students according to their reported degree they were pursuing and the presence of an RD credential. From an a priori power analysis using an effect size of 0.3 with $\alpha=0.05$ and $\beta=0.80$, the target sample size was 111 participants.

Survey Design

An electronic survey was developed on the Qualtrics survey platform incorporating demographic, educational, and professional characteristic questions, the 16-item PBDRIS, and the 17-item IRQ.^{5,9} The full informed

consent occurred on the first page of the electronic survey. The PBDRIS tool was developed by Dr. Byham-Gray and validated by Plant et al. to measure RD involvement in research.⁵ This tool was adapted from the Dietitian Research Involvement Survey (DRIS) to better reflect clinical dietetics practice and was informed by Wylie-Rosett et al.'s four levels of research.^{4,23} The PBDRIS asks about the frequency of involvement in specific research activities.⁵ It is scored on a 5-point Likert scale ranging from "1 – never" to "5 – always."⁵ The total score ranges from 16 to 80 where higher numbers represent greater research involvement.⁵ In addition, the four sub-levels of research involvement are measured (Level 1 – Practice, Level 2 – Translation, Level 3 – Participation, and Level 4 – Leadership) with a score ranging from 4 to 20 at each level.⁵ The IRQ tool measures research interest and was initially developed and validated by Bishop and Bieschke²⁴ and then modified and validated by King et al. to reflect language specific to RDs.⁹ The modified IRQ asks about the degree of interest in specific research activities.⁶ The IRQ is scored on a 5-point Likert scale from "1 – very disinterested" to "5 – very interested" with scores ranging from 17 to 85.⁶ Higher numbers represent greater research interest.⁹ The last component of the survey was an optional entry into a raffle for one of three \$50 electronic Amazon gift cards.

Statistical Analysis

Categorical variables were reported using frequencies (n, %). Continuous variables were reported using mean \pm standard deviation or median (quartile 1, quartile 3) depending on data distribution. Differences in PBDRIS total scores, PBDRIS sub-scores, and IRQ scores among graduate program levels were analyzed using one-way ANOVA or Kruskal-Wallis test depending on data distribution. For significant findings, a post-hoc Bonferroni analysis was conducted to identify the significant between-group differences. Differences in scores

Table 2. Comparison of Research Involvement and Research Interest Among Students from Three Graduate Dietetics Program Levels

	Total Sample	Pre-Professional Master's	Post-Professional Master's	Post-Professional Doctorate	P
PBDRIS Total Score					
n	88	25	16	47	0.003^b
Mean ± SD	47.4 ± 10.9	41.2 ± 10.2^c	48.6 ± 6.9	50.2 ± 11.3^d	
Median (IQR ^a)	46.5 (40.0, 55.0)	40.0 (34.0, 50.0)	48.5 (42.5, 54.8)	48.0 (44.0, 59.0)	
Range	20.0 – 72.0	21.0 – 59.0	39.0 – 60.0	20.0 – 72.0	
PBDRIS Research Level 1 Sub-Score (Evidence-based Practice)					
n	89	26	16	47	0.218^e
Mean ± SD	17.1 ± 2.3	16.5 ± 2.5	17.6 ± 1.5	17.3 ± 2.5	
Median (IQR ^a)	18.0 (16.0, 19.0)	17.0 (15.0, 18.0)	18.0 (17.0, 18.8)	18.0 (16.0, 19.0)	
Range	8.0 - 20.0	9.0 – 20.0	14.0 – 20.0	8.0 – 20.0	
PBDRIS Research Level 2 Sub-Score (Translating Research)					
n	88	25	16	47	<0.001^e
Mean ± SD	12.7 ± 3.6	10.1 ± 3.6	13.9 ± 2.7	13.7 ± 3.2	
Median (IQR ^a)	13.0 (11.0, 16.0)	10.0 (7.0, 13.0)^c	14.0 (12.0, 16.0)^d	14.0 (12.0, 16.0)^d	
Range	4.0 – 18.0	4.0 – 16.0	8.0 – 18.0	4.0 – 18.0	
PBDRIS Research Level 3 Sub-Score (Research Participation)					
n	88	25	16	47	0.077^e
Mean ± SD	10.2 ± 4.5	8.5 ± 4.5	10.4 ± 3.9	11.0 ± 4.6	
Median (IQR ^a)	9.0 (7.0, 14.0)	7.0 (4.0, 11.0)	10.0 (9.0, 13.0)	9.0 (8.0, 15.0)	
Range	4.0 – 20.0	4.0 – 20.0	4.0 – 16.0	4.0 – 20.0	
PBDRIS Research Level 4 Sub-Score (Research Leadership)					
n	89	26	16	47	0.011^e
Mean ± SD	7.3 ± 3.5	6.0 ± 3.0	6.7 ± 2.8	8.2 ± 3.8	
Median (IQR ^a)	6.0 (4.0, 9.0)	4.0 (4.0, 8.3)^c	6.0 (4.3, 8.0)	8.0 (5.0, 11.0)^d	
Range	4.0 – 18.0	4.0 – 13.0	4.0 – 13.0	4.0 – 18.0	
IRQ Total Score					
n	88	26	15	47	<0.001^e
Mean ± SD	64.4 ± 12.8	54.7 ± 11.5	67.9 ± 11.9	68.9 ± 10.9	
Median (IQR ^a)	66.0 (56.0, 75.0)	56.0 (45.8, 59.3)^c	68.0 (60.0, 76.0)^d	69.0 (62.0, 78.0)^d	
Range	28.0 – 85.0	33.0 – 85.0	48.0 – 85.0	28.0 – 85.0	

IRQ: interquartile range; IRQ: Interest in Research Questionnaire; PBDRIS: Practice-Based Dietitian Research Involvement Survey; SD: standard deviation

^a IQR expressed as quartile 1, quartile 3

^b analysis by one-way ANOVA. Significant values bolded.

^{c,d} values with different superscript letters are significantly different at $P < 0.05$ by post-hoc Bonferroni analysis

^e analysis by Kruskal Wallis test. Significant values bolded.

between the dichotomized variable percent of program completion (<50% and ≥50%) were analyzed by independent T-test or Mann-Whitney U test depending on data distribution. Relationships between PBDRIS total score, IRQ score, and years of RD practice were analyzed using Spearman correlation as data were not normally distributed. All statistical analyses were conducted using IBM SPSS v.28. A $P < 0.05$ was considered statistically significant.

RESULTS

Ninety-four of 327 graduate dietetics students responded to the survey. After accounting for individuals who did not consent to participate (n=1) and met the exclusion criteria (n=4), a total of 89 students were included in the analysis for a 27.2% response rate.

The majority of participants self-identified as female (n=82, 92.1%) and as White (n=68,

77.3%) (Table 1). The median age was 35.0 (24.8, 44.0) years. Prior to the current program enrollment, 48.3% (n=43) of participants had completed a bachelor's degree and 51.7% (n=46) had completed a master's degree as their highest degree. The RD credential was held by 70.8% (n=63) of participants. Participants with the RD credential had been practicing for a median of 11.5 (5.8, 21.0) years and were most frequently working in acute care (n=21, 33.3%) (Table 1).

Research Involvement

The mean PBDRIS total score was 47.4 ± 10.9 out of 80, representing 59.3% of the total possible score and the third level (participation) of research involvement among participants (Table 2). While the total PBDRIS score was normally distributed, the sub-scores were all not normally distributed. The PBDRIS total score was comprised of median sub-scores (out of 20 possible points) of 18.0 (16.0, 19.0) at research level 1 (practice), 13.0 (11.0, 16.0) at research level 2 (translation), 9.0 (7.0, 14.0) at research level 3 (participation), and 6.0 (4.0, 9.0) at research level 4 (leadership). There were significant differences in PBDRIS total score among pre-professional master's, post-professional master's, and post-professional doctorate students ($P=0.003$) (Table 2). On post-hoc Bonferroni analysis, post-professional doctorate students had a significantly higher PBDRIS total score (50.2 ± 11.3) compared to pre-professional master's students (41.2 ± 10.2) ($P=0.002$). Significant differences in research level 2 (translation) sub-scores were found between pre-professional master's students [10.0 (7.0, 13.0)] and post-professional master's [14.0 (12.0, 16.0)] as well as post-professional doctorate students [14.0 (12.0, 16.0), $P<0.001$] (Table 2). There were also significant sub-score differences between pre-professional master's students [4.0 (4.0, 8.3)] and post-professional doctorate students [8.0 (5.0, 11.0)] at research level 4 (leadership) ($P=0.011$). There was no significant difference

in PBDRIS total score or research level sub-scores between students who had completed <50% of their program and those who had completed $\geq 50\%$ of their program. There was a moderate, positive correlation between PBDRIS research level 2 sub-score (translation of research) and years of dietetics practice ($r=0.30$, $P=0.017$). No significant relationships were found between PBDRIS total score or research level 1, 3, and 4 sub-scores and years of dietetics practice.

Research Interest

The median IRQ total score was 66.0 (56.0, 75.0) out of 85, representing 77.6% of the total possible score (Table 2). The Interest in Research Questionnaire scores differed significantly among pre-professional master's, post-professional master's, and post-professional doctorate students ($P<0.001$) (Table 2). There were significantly higher median IRQ scores among post-professional doctorate students [69.0 (62.0, 78.0)] and post-professional master's students [68.0 (60.0, 76.0)] compared to pre-professional master's students [56.0 (45.8, 59.3)] ($P=0.004$ and $P<0.001$, respectively). Interest in Research Questionnaire scores did not differ significantly between students who had completed <50% or $\geq 50\%$ of their program. There was also no correlation between IRQ score and years of dietetics practice.

Relationship Between Research Involvement and Interest

There was a significant, moderate, positive correlation between PBDRIS total score and IRQ score ($r=0.55$, $P<0.001$) among graduate dietetics students (Table 3). Significant, moderate, positive correlations between PBDRIS total score and IRQ score were found among the post-professional master's students ($r=0.59$, $P=0.021$) and the post-professional doctorate students ($r=0.59$, $P<0.001$). There was no significant correlation between PBDRIS total score and IRQ score among pre-professional master's students.

Table 3. Correlation Between Research Involvement and Research Interest Among Graduate Dietetics Students

	Total Sample IRQ Total Score	Pre-Professional Master's IRQ Total Score	Post-Professional Master's IRQ Total Score	Post-Professional Doctorate IRQ Total Score
Total Sample PBDRIS Total Score	n	87		
	r	0.55		
	<i>P</i> ^a	<0.001		
Pre-Professional Master's PBDRIS Total Score	n	25		
	r	0.17		
	<i>P</i> ^a	0.430		
Post-Professional Master's PBDRIS Total Score	n	15		
	r	0.59		
	<i>P</i> ^a	0.021		
Post-Professional Doctorate PBDRIS Total Score	n	47		
	r	0.59		
	<i>P</i> ^a	<0.001		

IRQ: Interest in Research Questionnaire; PBDRIS: Practice-Based Dietitian Research Involvement Survey

^a Analysis by Spearman correlation test. Significant values bolded.

DISCUSSION

This study is the first known to describe the relationship between research involvement and research interest of graduate dietetics students using existing validated tools as suggested by Hand.³ In previous studies, only up to 8.6% of participants reported being enrolled in a master's or doctorate program.^{5,11,19,20} Fewer credentialed RDs are in this study than in other studies on RD research involvement.^{5,6,11,18,20,21,25,26} Even though this study included pre-professional master's students, the educational characteristics in this study are similar to those reported in the studies by Plant et al. and by Boyd et al. (2016) that sampled RDs in clinical practice.^{5,6}

Research Involvement of Graduate Dietetics Students

In this study, research involvement was at the participation level (research level 3) with 59% of the possible PBDRIS total score. This suggests that participants apply EBP, mentor colleagues on EBP and research interpretation, develop clinical practice guidelines, and participate in research and/or quality

improvement initiatives.^{4,5} This was higher than reported in five out of eight previous studies on RD research involvement where scores ranged from 26% to 52% of the possible total scores depending on the survey tool used.^{5,6,11,18-20,25} The remaining three studies reported higher research involvement scores, but they sampled RDs who were more likely to have greater research involvement (alumni from master's and doctorate dietetics programs, RD researchers, and RDs affiliated with a research networking group).^{18,19,26} As the survey tools differed between studies, the score differences may reflect the use of the Research Involvement Questionnaire or the DRIS tools as opposed to the PBDRIS tool.^{5,6,11,18-20,25}

Participants in this study had a higher median PBDRIS total score compared to Plant et al.'s study.⁵ Our higher PBDRIS score is notable as this includes pre-professional master's students who would be expected to have a lower PBDRIS score compared to RDs. These results may reflect greater research involvement of RDs in the past 8 years since the 2014 survey by Plant et al.⁵ although they may also reflect the characteristics of graduate dietetics students who may have a greater

research involvement as suggested by Gassmann et al.²⁶ Alumni from graduate dietetics programs in Gassmann et al.'s study had higher PBDRIS total scores than participants in this study and Plant et al.^{5,26}

Involvement in activities related to incorporating research into practice (research level 1) and translating research into guidelines and mentoring (research level 2) was higher than reported by Plant et al.⁵ The difference in research level 1 scores may reflect a greater emphasis on EBP in recent years both in informal and formal education as even the pre-professional master's students' scores were higher than those reported by Plant et al.^{2,5} The difference between research level 2 sub-scores in this study and Plant et al. may reflect the involvement in mentoring, teaching, and developing practice guidelines of RDs who pursue graduate education.⁵

Participation and leadership in research activities (research levels 3 and 4, respectively) were low in both this study and Plant et al.'s study.⁵ While the total PBDRIS score reflected research involvement at the participation level, these sub-scores suggest that participants were infrequently participating in and presenting the results of research and quality improvement initiatives, applying for research grants, and leading research.^{4,5} Research level 3 and 4 sub-scores were lower in this study than reported by Gassmann et al. who surveyed graduate dietetics program alumni.²⁶ This suggests that while research participation and leadership frequency are low among graduate dietetics students, it may increase after the completion of graduate curricula particularly if research is a key focus.²⁶ Research participation during dietetics education has been associated with an increase in students' desire to participate and lead research in the future.²⁷

The relationships between PBDRIS total score and sub-scores and graduate dietetics program levels have not previously been explored. While pre-professional master's, post-professional master's, and post-professional doctorate students all had mean

PBDRIS total scores suggesting a participation level (research level 3) of research involvement, the pre-professional master's students had significantly lower PBDRIS total scores compared to the post-professional doctorate students. These findings are similar to the results by King et al. where RDs had a significantly higher DRIS total score compared to pre-professional students.¹⁹ King et al. also found significant differences in all research-level sub-scores between pre-professional students and RDs¹⁹; whereas this study only identified significant differences between groups at research level 2 (translation) and research level 4 (leadership). These inconsistencies could be attributed to the differences in populations between the two studies; however, both confirm that pre-professional students have performed fewer research activities related to translating research, mentoring, developing guidelines, and leading research than RDs. The latter likely have more opportunities to be involved in these research activities.

Previous evidence on the relationship between the length of RD practice and research involvement has been mixed. Boyd et al. (2016) found a significant, moderate, negative correlation between years of RD practice and research involvement.⁶ Alternatively, Gassmann et al., Lowe et al., Whelan et al., and Howard et al. report a positive relationship between years of RD practice and research involvement.^{21,25,26,28} This study found no relationship between the length of practice and research involvement which has also been reported in other health care professionals,²⁹ although this study was not powered to test this relationship.

Research Interest in Graduate Dietetics Students

Participants in this study had a greater research interest compared to the study by Boyd et al. (2016), the only other known study to quantify the research interest of RDs using the IRQ.⁶ Given that the study by Boyd et al. (2016) was a secondary analysis of a

randomized controlled trial conducted in 2012,^{6,9} differences in dietetics education over the past decade may have contributed to greater research interest among both pre- and post-professional graduate dietetics students.

Even though IRQ scores in this study were higher than previously reported, the median IRQ score represents answers on the 5-point Likert scale between “neutral” and “interested.” However, the pre-professional students’ median IRQ score represents answers closer to “neutral” on the 5-point Likert scale. This suggests that the pre-professional students in this study may have lower research interest than in the study by King et al. where 87.9% of the pre-professional students reported either being interested or very interested in research.¹⁹

This study identified a significant difference in IRQ among graduate program levels which provides new insight into research interest among graduate dietetics students at both the pre- and post-professional levels. While a comparison among pre- and post-professional graduate students using IRQ scores has not previously been published, King et al. reported a significantly higher research interest in RDs compared to pre-professional dietetics students at the undergraduate and graduate levels.¹⁹ Together, these findings suggest that research interest is lower among pre-professional dietetics students compared to RDs. Low research interest may contribute to low motivation toward research and subsequent low research involvement which is suggested by different research involvement theories.^{9,30} Given that research interest has been identified as a barrier to research involvement,⁸ these results identify a potential target for educational intervention. The non-significant difference in IRQ score between post-professional master’s and post-professional doctorate students conflicts with Boyd et al. (2016) who found a moderate correlation between the highest degree completed and IRQ score.⁶ This may be due to the characteristics of RDs with a bachelor’s degree who are actively pursuing a post-professional master’s degree and may not

reflect the characteristics of all RDs with a bachelor’s degree.

The concept of how research interest may change during graduate dietetics education has not previously been explored. No relationship between progress within a program and research interest was found in this study, and this is consistent with studies that included students in counseling and education doctorate programs.³¹⁻³⁴ However, longitudinal measures of research interest have not been done which would better describe this relationship.

The Relationship Between Research Involvement and Interest

The moderate, positive correlation between research involvement and interest found in this study was also reported by Boyd et al. (2016).⁶ These studies suggest that as research interest increases so does research involvement. If a greater research interest is cultivated during education, this may contribute to higher levels of research involvement and more frequent research participation and leadership after graduation.

Limitations

As this study sampled students from three universities in the U.S., the results may not be generalizable to other graduate dietetics student populations at other universities or in undergraduate and supervised practice programs. The results may also not be generalizable to the general RD population as the post-professional students in this study may reflect characteristics of RDs choosing to pursue post-professional graduate education. The lack of generalizability may be particularly true for RDs with a bachelor’s degree given that more than half of the participants in this study had a master’s degree and were enrolled in a doctorate program.

While significant results were identified, this study may still be underpowered to explore between-group comparisons involving the post-professional master’s group (18% of the total sample) because of unequal group size at each program level. In addition, this

study was unable to achieve its sample size target based on the a-priori power analysis.

With this survey design, the results may be prone to non-response and social desirability bias. This study also did not evaluate perceived barriers to research involvement beyond research interest. Lastly, given the cross-sectional design, it is unclear whether research interest or involvement increases naturally throughout an RD's education and career.

CONCLUSION

Post-professional doctorate students have significantly higher research involvement than pre-professional master's students. Research interest is significantly higher in post-professional master's and doctorate students compared to pre-professional master's students. However, participation and leadership in research activities remain low despite an interest in research by post-professional graduate students. In addition, there was a moderate, positive correlation between research involvement and research interest.

IMPLICATIONS FOR EDUCATION AND FUTURE RESEARCH

Although this study's results imply that pre-professional master's students and post-professional master's and doctorate students are using EBP activities, it also suggests a re-evaluation of current graduate education programs particularly at the pre-professional graduate level. Effort should be made before entry-level RD practice to build research interest and capacity so that RDs are involved in research that informs EBP. This could be facilitated by having a forum for alumni to share their research experiences with students,³⁵ mentoring by or partnering with established RD researchers, academic researchers, or students in higher degree programs,³⁶ and strengthening the research competencies within pre-professional programs. A previous study has suggested that the interpretation and implementation of

ACEND research competencies may be influenced by the dietetic program director's own research involvement.²⁰ The current ACEND FEM research competencies may also be prone to interpretation¹³; therefore, more directive and detailed language that aligns with ACEND's goal of graduating RDs that can participate in or lead research (research levels 3 and 4) may be required.¹⁶ This may be of particular importance in the U.S. where RDs will soon enter practice with a graduate degree and may not pursue any additional research training.

Further studies are needed on cultivating RD researchers from pre-professional education to entry-level practice and beyond and on what barriers and facilitators exist along this continuum. This research should include longitudinal studies with quantitative and qualitative components as well as implementation studies before and after curricula changes to examine trends in research involvement and interest.³

CONFLICTS OF INTEREST

The author(s) report no conflicts of interest.

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