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Abstract

Purpose: The Future Education Model (FEM) was introduced in 2017 and included changes to the existing dietetics education model, such as a shift in degree requirements and a change in Accreditation Standards based on competency-based programming. Starting in 2019, dietetics educators could apply to begin implementing the FEM at their institutions. Social Cognitive Theory (SCT) served as the framework for this research. SCT can be used to understand individuals' motivations in various contexts, including workplace environments like higher education. Self-efficacy is one component of SCT; self-efficacy in dietetics educators may be an important indicator of potential success implementing the mandatory FEM. The purpose of this study was to 1) determine dietetics educators' self-efficacy towards implementing the FEM, and 2) compare self-efficacy scores based on demographic characteristics. **Methods:** A reliable and valid online questionnaire was developed and emailed to 520 dietetics directors in the United States. Frequencies, mean scores, and standard deviations were calculated for self-efficacy items; self-efficacy indicates potential to meet demands of implementing the FEM. One-way analysis of variance (ANOVA) was used to analyze differences between job title, age, years in higher education, and dietetics educator general self-efficacy. **Results:** There were 161 dietetics directors who responded (31% response rate). Dietetics directors' mean total self-efficacy scores indicated self-efficacy towards implementing the FEM across all positions, age groups, and years in higher education. One-way ANOVA results indicated no significant differences between director age nor years in higher education and total mean self-efficacy scores, but there was a significant difference between graduate program directors' ($M=63.50$, $SD = 11.24$) and internship directors' (53.41 , $SD = 6.91$) mean total self-efficacy scores ($p < 0.05$). **Conclusions:** Participants in this study were generally self-efficacious regarding implementing the FEM, a possible predictor of successful implementation when the time comes to making program changes and implementing these necessary changes.

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ABSTRACT

Purpose: The Future Education Model (FEM) was introduced in 2017 and included changes to the existing dietetics education model, such as a shift in degree requirements and a change in Accreditation Standards based on competency-based programming. Starting in 2019, dietetics educators could apply to begin implementing the FEM at their institutions. Social Cognitive Theory (SCT) served as the framework for this research. SCT can be used to understand individuals' motivations in various contexts, including workplace environments like higher education. Self-efficacy is one component of SCT; self-efficacy in dietetics educators may be an important indicator of potential success implementing the mandatory FEM. The purpose of this study was to 1) determine dietetics educators' self-efficacy towards implementing the FEM, and 2) compare self-efficacy scores based on demographic characteristics. **Methods:** A reliable and valid online questionnaire was developed and emailed to 520 dietetics directors in the United States. Frequencies, mean scores, and standard deviations were calculated for self-efficacy items; self-efficacy indicates potential to meet demands of implementing the FEM. One-way analysis of variance (ANOVA) was used to analyze differences between job title, age, years in higher education, and dietetics educator general self-efficacy. **Results:** There were 161 dietetics directors who responded (31% response rate). Dietetics directors' mean total self-efficacy scores indicated self-efficacy towards implementing the FEM across all positions, age groups, and years in higher education. One-way ANOVA results indicated no significant differences between director age nor years in higher education and total mean self-efficacy scores, but there was a significant difference between graduate program directors' ($M=63.50$, $SD = 11.24$) and internship directors' (53.41 , $SD = 6.91$) mean total self-efficacy scores ($p < 0.05$). **Conclusions:** Participants in this study were generally self-efficacious regarding implementing the FEM, a possible predictor of successful implementation when the time comes to making program changes and implementing these necessary changes.

Keywords: dietetics, higher education, self-efficacy

INTRODUCTION

Dietitians are nutrition professionals working in a variety of settings to support patient and consumer health while ensuring safety and quality care.^{1,2} Traditionally, one of the educational pathways to becoming a dietitian was to complete a 4-year undergraduate degree and then an internship. The Future Education Model (FEM) reflects changes in dietetics education including competency-based education mandates and a graduate degree requirement to take the registration exam to become a dietitian.³ Dietetics directors in the United States are starting to implement program changes to align with the FEM.

Social cognitive theory provides a narrative for the self-efficacy of educators being important in supporting the success of new education programs like the proposed FEM. Bandura defined self-efficacy as “belief in one’s capacity to organize and execute the courses of action required to produce given attainments”.⁴ In addition, a person’s self-efficacy can be impacted by the scope and complexity of the task, as well as the level of perceived burden and obstacles.^{5,6} While one study has investigated perceptions of non-university affiliated dietetics internship directors regarding changing dietetics education requirements, no known research has investigated self-efficacy of dietetics directors regarding implementing the FEM.⁷ Investigating self-efficacy of dietetics directors is important because these educators are ultimately responsible for successfully implementing new FEM initiatives and thereby understanding self-efficacy can help determine if dietetics directors believe in their abilities to implement the FEM.⁴

Self-efficacy of educators can influence implementation efforts of major curriculum reform.^{8,9} Louvel identified curriculum change as a type of organizational change in higher education whereby educators strategically adapt to meet the demands of an evolving education landscape by identifying and combining available resources during periods of change.¹⁰ Schyns developed a model showing the relationship between leadership, self-efficacy, and readiness for occupational change within educators’ work environment during times of organizational change.¹¹ Self-efficacy of educators allowed them to prepare for occupational change within their workplace by being willing to work beyond their usual tasks, persevere through the implementation of change, and encourage others to adapt and accept changes that may occur.¹¹

Research involving self-efficacy has been conducted in dietetics, including self-efficacy and mobile health app use, self-efficacy and motivational interviewing skills, and self-efficacy and nutrition care process skills on simulated patient practice.^{12,13,14} Areas of self-efficacy research in allied and other health professions include self-efficacy and nurse managers’ confidence, self-efficacy and physical therapists’ clinical reasoning skills, and pediatric allied healthcare providers’ self-efficacy and knowledge of autism spectrum disorders.^{15,16,17} To date, no known research has investigated self-efficacy of dietetics directors when implementing a comprehensive curriculum change in dietetics education. Dietetics directors’ willingness to implement new curriculum reform is considered essential for its success, especially because there are concerns about the processes involved in such an extensive transition. The purpose of this research was to determine dietetics directors’ self-efficacy and willingness to make extra efforts and persevere when obstacles arise during FEM implementation. The specific research objectives were as follows: 1) determine dietetics directors’ self-efficacy scores and 2) compare self-efficacy scores based on dietetics directors’ demographics.

METHODOLOGY

Research Design

As part of a larger study, a descriptive quantitative study was conducted using a Qualtrics® formatted questionnaire inclusive of demographic questions and a 15-item self-efficacy scale; ten of the self-efficacy items were adapted from previously developed self-efficacy questionnaires with general self-efficacy attributes and five additional items specific to FEM implementation were included.^{18,19,20} Each self-efficacy item had a 5-point Likert-type rating scale with the following response choices and numerical values: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), and Strongly Agree (5). The 5-point Likert-type scale was selected to allow participants to choose from a range of responses that included a neutral response, was not expected to induce user fatigue with too many category choices, and allowed for computation of a score from a series of item responses.²¹ Cronbach’s coefficient alpha was .86, demonstrating good internal consistency reliability of the self-efficacy scale.²² Participant demographics and program information questions included participant age, job title, experience, and institution type (public or private).

Prior to distribution, a two-phase pilot test was conducted asking dietetics directors and faculty members with expertise in dietetics and education to evaluate the questionnaire’s understandability, appearance, content, and ease of use. Small grammatical changes were made following each phase.

Sample and Data Collection

Following Institutional Review Board approval, an introductory letter with an embedded link to the on-line Qualtrics® questionnaire was sent to dietetics directors requesting their participation. All dietetics directors in the United States working in ACEND® accredited dietetics education programs in 2019 (N=520) were emailed the questionnaire. Dietetics directors oversee undergraduate, graduate, internship and/or individualized supervised practice pathway (ISPP) programs. To encourage response,

three subsequent follow-up requests were made via email and telephone calls. Participants had the opportunity to enter a lottery for a gift card and/or receive study results.

Data Analysis

Questionnaire data analyses were performed using IBM SPSS Version 26.0 (SPSS, Chicago, Illinois, USA). Descriptive statistics including frequencies, percentages, mean scores, and standard deviations, were computed. One-way Analysis of Variance (ANOVA) was performed to determine differences between job title, age, or years in higher education, and total self-efficacy scores. As suggested by Bandura, self-efficacy total scores were calculated for comparisons; higher scores indicate greater self-efficacy, and lower scores indicate lesser self-efficacy.²³ Negatively worded self-efficacy items were reversed coded, so value labels were matched to positively worded items.

RESULTS

Participants

A total of 161 dietetics directors responded to the self-efficacy questionnaire. See Table 1 for demographic information. Dietetics directors' ages ranged from 31-71 years old. Dietetics directors from both public and private institutions participated. Dietetic internship directors represented the largest group of participants (48.5%); 24.2% were dietetics directors representing more than one program type (combined). Most of participants (58.3%) had more than 10 years of experience in higher education.

Table 1. Frequency and Percentage Summaries of Dietetics Director Demographic Characteristics (n=137-161)

Characteristics	n	%
Age in Years (n=154)		
31-40	37	24
41-50	43	27.9
51-60	47	30.5
61-71	27	17.5
Job Title* (n=161)		
Internship Director	79	48.5
Didactic Program Director	61	37.9
Graduate Program Director	21	13.0
Undergraduate Coordinated Program Director	20	12.3
Individualized Supervised Practice Pathway Director	16	9.9
Graduate Coordinated Program Director	13	8.0
Other	11	6.8
Directors' Higher Education Experience in Years (n=137)		
Two or less	7	5.1
3-5	12	8.8
6-10	39	28.5
11-20	51	37.2
21-30	22	16.1
More than 30	6	4.4
Type of Institution (n=161)		
Public	125	77.6
Private	36	22.4

*= multiple answer responses. Percentages may not total exactly 100% due to rounding.

Descriptive statistics for directors' responses to self-efficacy questions are presented in Table 2. Results showed the highest mean score was for the item, *when implementing the FEM, I am confident I can or could stick to aims and accomplish goals* with a mean score of 4.17 (SD = 0.66). The lowest mean score of 2.76 (SD = 0.97) was for the item, *when implementing the FEM, I am confident I can or could have difficulty handling unexpected events*. Participants' mean total self-efficacy score was 55.5 (SD = 7.2). See Figure 1 for distribution of directors' total self-efficacy scores.

Table 2. Agreement Frequencies: Dietetics Director General Self-Efficacy Scale Items (n = 160-161)

Self-Efficacy Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	M (SD)
When implementing the FEM, I am confident I can or could... ^a	Frequency n (%)					
Stick to my aims and accomplish goals.	0 (0.6)	2 (1.2)	17 (10.6)	93 (57.8)	49 (30.4)	4.17 (0.66)
Invest the necessary effort and solve problems.	1 (0.6)	2 (1.3)	21 (13.1)	95 (59.4)	41 (25.6)	4.08 (0.70)
Handle whatever comes my way.	1 (0.6)	1 (0.6)	20 (12.4)	103 (64.0)	36 (22.4)	4.07 (0.65)
Find several solutions to a problem that arises.	1 (0.6)	1 (0.6)	18 (11.2)	108 (67.1)	33 (20.5)	4.06 (0.63)
Solve difficult problems, if I try hard enough.	3 (1.9)	4 (2.5)	24 (14.9)	84 (52.2)	46 (28.6)	4.03 (0.84)
Think of a solution, if I find myself in trouble.	1 (0.6)	2 (1.2)	23 (14.3)	104 (64.4)	31 (19.3)	4.01 (0.67)
Remain calm and use coping abilities when facing difficulties.	0	6 (3.7)	30 (18.6)	90 (55.9)	35 (21.7)	3.96 (0.75)
Use my resourcefulness to handle unforeseen situations.	1 (0.6)	4 (2.5)	37 (23.0)	94 (58.4)	25 (15.5)	3.86 (0.72)
Disseminate information regarding the FEM.	7 (4.4)	15 (9.4)	34 (21.3)	69 (43.1)	35 (21.9)	3.69 (1.05)
Succeed in the implementation process.	12 (7.5)	18 (11.2)	37 (23.0)	54 (33.5)	40 (24.8)	3.57 (1.19)
Help others meet goals.	9 (5.6)	24 (14.9)	45 (28.0)	54 (33.5)	29 (18.0)	3.43 (1.12)
Overcome barriers.	11 (6.8)	25 (15.5)	36 (22.4)	64 (39.8)	25 (15.5)	3.42 (1.13)
Manage to solve difficult problems.	11 (6.8)	20 (12.4)	48 (29.8)	59 (36.6)	23 (14.3)	3.39 (1.09)
Experience difficulty to get what I want, if opposed. R	7 (4.3)	39 (24.2)	47 (29.2)	55 (34.2)	13 (8.1)	2.83 (1.03)
Have difficulty handling unexpected events. R	5 (3.1)	37 (23.0)	41 (25.5)	70 (43.5)	8 (5.0)	2.76 (0.97)

Note: R = reverse coded and reverse labeled item. Rating Scale: 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree. FEM = Future Education Model. Percentages may not total exactly 100% due to rounding. ^aItem wording truncated.

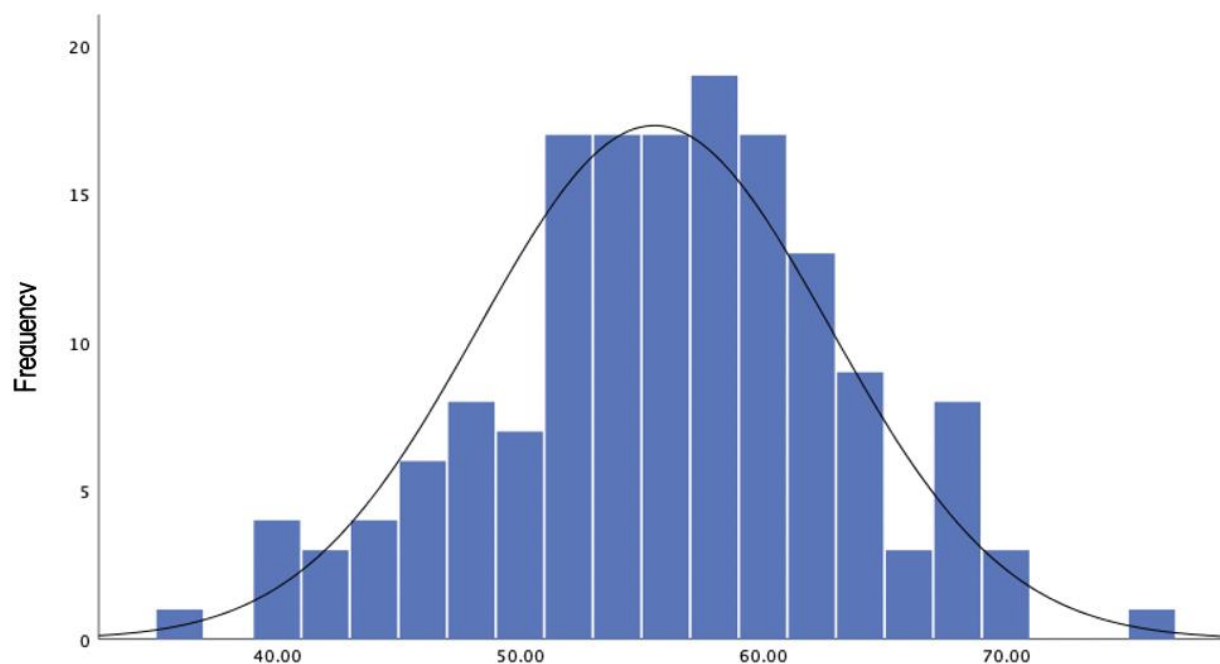


Figure 1. Total Self-Efficacy Scores

See Table 3 for one-way ANOVA results for director mean total self-efficacy scores and age, director position, and years in position. Some dietetics directors chose to not respond to all demographic questions; therefore, some responses were not usable for one-way ANOVA. Total self-efficacy scores ranged from 39 to 75 across all directors' age groups. In general, directors between 31 and 40 years-old had a higher mean total score for self-efficacy regarding implementing the FEM ($M = 57.29$, $SD = 7.02$) and 51 to 60 years-old had the lowest mean total score of all age groups ($M = 54.35$, $SD = 7.68$). When comparing dietetics directors' age and total self-efficacy scores, there was no significant difference between age and mean total self-efficacy scores at the $p < .05$ level [$F(3, 145) = 1.32$, $p = .27$].

A one-way between groups ANOVA was conducted to compare dietetics directors' position type and self-reported, mean total self-efficacy scores. Recognizing directors could choose more than one option for director position, directors that indicated more than one director responsibility (e. g. internship director and graduate director) were grouped and designated as combined. Total self-efficacy scores ranged from 36 to 75 across all director position types. There was a statistically significant difference for position type and self-efficacy mean total scores at the $p < .05$ level [$F(5, 148) = 2.56$, $p = .03$]. Post hoc comparisons using the Tukey HSD test indicated that the total score for graduate directors ($M = 63.50$, $SD = 11.24$) was statistically significantly different than dietetic internship directors' total score ($M = 53.41$, $SD = 6.91$). However, no other statistically significant differences between mean total scores of other directors' positions were found.

A one-way between groups ANOVA was conducted to compare dietetics directors' years in higher education and self-reported mean total self-efficacy scores. Total self-efficacy scores ranged from 39 to 75 across all years in higher education groups. There were no statistically significant differences based on participants' years in higher education and mean total self-efficacy scores at the $p < .05$ level [$F(5, 126) = 0.722$, $p = .61$].

Table 3. One-way ANOVA Results for Director Mean Total Self-Efficacy Scores and Age, Director Position, and Years in Position

Director Characteristic					
Age in Years				F(3,145)	p
	n	M	SD		
				1.32	0.27
31-40	34	57.29	7.02		
41-50	42	56.43	7.26		
51-60	46	54.35	7.68		
61+	27	55.15	3		
Director Position*				F(5, 148)	p
				2.56	.03**
Graduate	4	63.5***	11.24		
Undergraduate	7	59.5	4.8		
Coordinated					
Graduate	4	57.14	2.63		
Coordinated					
Combined	36	56.36	5.79		
Didactic	44	55.66	7.95		
Dietetic Internship	59	53.41***	6.91		
Years in Higher Education				F(5,126)	p
				72	0.61
2 years or less	7	53.57	5.5		
3-5	11	57.64	6.52		
6-10	37	54.62	6.35		
11-20	50	56.52	8.19		
21-30	21	54.58	5.88		
30+	6	55.17	6.62		

Note: *Uses Harmonic Mean Sample Size = 8.45. **p < .05. ***Tukey HSD post hoc test indicated graduate dietetics directors had statistically significantly higher mean self-efficacy total scores than dietetic internship dietetics directors.

DISCUSSION

Within the context of Bandura's social cognitive theory, an individual's perception of their own self-efficacy or self-belief, can impact how challenges are met and how confident a person is in their ability to succeed.²⁴ Higher perceived self-efficacy indicate motivation and confidence in one's ability to produce desired results and meet challenges with persistence.²⁴ The purpose of this study was to determine dietetics directors' self-efficacy towards implementing the FEM. The majority of dietetics directors had self-efficacy scores in the top third of the scale. These results indicate dietetics directors believe in their own ability to meet demands of implementing the FEM.

Researchers were interested in investigating possible differences in self-efficacy based on demographic characteristics. While not significantly different, older dietetics directors had somewhat low mean total self-efficacy scores in this study in comparison to younger directors. Older dietetics directors may need more encouragement and reinforcement in their abilities to overcome FEM implementation obstacles or they may be more skeptical about implementing a new program based on previous experiences.²⁵ The overall structure of the FEM does not include dietetic internships as a separate program and mandates a graduate level degree.

Dietetic internship directors' self-confidence or belief in their ability to implement the FEM successfully (i. e. self-efficacy) may be negatively impacted by the changing accreditation structure of dietetics education that does not include their programs independently. Our results showed that graduate directors had a significantly higher mean total self-efficacy score for implementing the FEM compared to dietetic internship directors but not significantly different from other director positions' mean total scores. The FEM was developed with a focus on graduate education, and this may explain why graduate program dietetics directors had higher self-efficacy scores than dietetics internship directors. In general, directors have belief in their ability to implement the FEM.

More experienced dietetics directors, based on number of years in higher education, did not appear to impact self-efficacy towards implementing the FEM, as no significant differences in mean total self-efficacy scores were found.

Understanding dietetics directors' self-efficacy is important because self-efficacy beliefs have potential to impact behaviors, goal setting, motivation, strategic thinking, and resilience.²³ Our findings contribute to the growing body of self-efficacy research in different domains, specifically that of dietetics directors in higher education implementing a new education model. A variety of experiences are thought to influence self-efficacy beliefs including mastery experiences (previous experiences), vicarious experiences (observing others' experiences), social persuasions (influence through communications with significant others), or affective or physiological influences.²⁴ As dietetics directors have more FEM related experiences, self-efficacy could change based on the impact of these experiences.²⁵

CONCLUSIONS

Implementing competency-based education models, like the FEM, can be difficult. Physicians and allied health educators have led the way in implementing competency-based education models and identified some ongoing challenges for implementing them; examples include insufficient institutional and curriculum support, cost coverage for additional expenses, poor execution and lack of consensus across disciplines, as well as resistant attitudes of faculty and stakeholders.^{1,26,27,28} A higher scores of self-efficacy in dietetics directors may be important as an indicator of the potential for success when implementing the FEM to overcome obstacles. As dietetics directors continue to be educated about the FEM, begin planning processes to implement the FEM, and are exposed to other dietetics directors' experiences implementing the FEM, self-efficacy could change based on the impact of these experiences. Self-efficacy scores may increase over time as dietetics directors' knowledge about FEM implementation and other successes increase. Reported successes from programs that were early adopters of the FEM may also increase directors' belief in their own abilities to implement the new model. Further research is needed to understand relationships between variables potentially impacting director self-efficacy regarding FEM implementation.

Investing in training about competency-based education and providing release time for this training could help improve self-efficacy scores of dietetics directors by improving their FEM knowledge. As FEM programs are implemented, comparisons based on performance measures and self-efficacy perceptions could be investigated. Dietetics directors are only one part of the team needing to make changes for FEM implementation. Research by Cooper and Kellog emphasized importance of faculty support for successful curriculum change when implementing new educational programs.^{29,30} Measuring non-director educators' self-efficacy was beyond the scope of this research but, given the importance of educator roles in curriculum implementation, doing so may be useful in assessing those most motivated to make changes for successful FEM implementation.

Leaders' self-efficacy may indirectly influence employees, perception of obstacles, and outcomes. Dietetics directors are often middle managers charged with implementing new ideas and programs for educating dietetics students. Researchers have studied self-efficacy of leaders and their effectiveness; findings revealed mixed results.^{31,32} Many factors can impede a leaders' efforts to succeed in implementing new programs in higher education including barriers that cannot be overcome or support that cannot be sustained over long periods of time.²⁹ At this point in time, dietetics directors are not forced to implement the FEM, but understand responsibilities needed for making changes. Our research shows that dietetics directors were self-efficacious regarding implementing the FEM, a possible predictor of successful implementation when the time comes to make program changes.

Finally, self-efficacy of other allied health professionals implementing new professional education programs is not widely known. Ongoing challenges of implementing and modifying medical and allied health profession education to meet the ever-changing health care requisites and evidence-based practice imperatives may impact self-efficacy. Self-efficacy of other allied health professionals implementing a new education program could be investigated using a modified version of the self-efficacy scale from this research as changes are made to existing educational programs.

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