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### Cover Page Footnote

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# Credentialing Exam Hesitancy in Dietary Management Certificate Program Graduates: A First Look at Perceived Barriers

Sona Donayan  
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Certified dietary managers (CDMs) lead their food services team by ensuring food quality, safety, and palatability while applying nutrition principles to food purchasing, storage, preparation, and service. Despite labor shortages and forecasted growth in both healthcare and food services management jobs, approximately 30% of credentialing exam candidates forego their exam within the first year after completing a didactic career technical education program approved by the Association of Nutrition and Foodservice Professionals. Moreover, very few return to pursue their exam after the first year. This study explored, through the lens of the theory of planned behavior, the perceived obstacles contributing to CDM program graduates' reluctance to sit for the national board certification. Semi-structured interviews were conducted with a purposive and convenience sample of eight participants from various regions of the United States to gain insight into internal and external factors contributing to their exam hesitancy. Thematic analysis yielded several themes, including a lack of control over internal and external barriers to taking the exam. Participants reported facing family and work constraints exacerbated by the pandemic and the lack of financial resources to meet exam preparation and registration costs. They expressed feelings of exam-related anxiety, being ill-prepared, unsupported by their programs and employers and discouraged by the observed stressful working conditions of current CDMs. This study helps establish a foundation for remedial action by stakeholders, educational program leaders, and CDM employers in support of certification candidates. Findings raise questions about the prevalence of credentialing exam barriers in other disciplines and pave the way for future investigations about exam hesitancy.

**Keywords:** nutrition, certified dietary manager, credentialing exam, exam hesitancy

## Introduction

Nutrition plays a vital role in human development, health, and well-being. Malnutrition is a growing global problem that affects one in three people. It contributes to poor health, lower productivity, and slower economic development across nations (Food and Agricultural Organization of the United Nations, 2022). The World Health Organization warns about malnutrition's "significant threats to human health" and supports the implementation of global nutrition programs to alleviate the burden of malnutrition (World Health Organization, 2024, para.3). The US Centers for Disease Control and Prevention (CDC) (2021) also upholds the importance of healthy eating patterns in the promotion of longevity and the prevention and management of chronic diseases.



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Malnutrition is paramount in health care settings due to its potential negative impact on patient outcomes. In a recent empirical study, food was ranked as the second most important factor, after physical facilities, influencing patient perceptions of quality and patient satisfaction (Ross & Venkatesh, 2015). A skilled food services workforce, guided by a competent leader, is essential for outstanding food and nutrition services that meet patients' needs and align with regulatory guidelines. A certified dietary manager (CDM) is the primary designated entity to lead a licensed health care facility's food and nutrition services in the absence of a registered dietitian nutritionist (RDN) employed in a full-time capacity (Code of Federal Regulations, 2023). RDNs are food and nutrition experts with a minimum of a graduate degree credentialed by the Commission on Dietetic Registration of the Academy of Nutrition and Dietetics. RDNs may be tasked to perform medical nutrition therapy or manage food service operations in healthcare. When employed part-time or in a consultant capacity, RDNs may be assisted by CDMs to fulfill their functions. CDMs actively support the nutrition care process from the initial steps of patient screening to ensuring the proper service of safe, palatable, and nutritionally adequate foods to patients. They oversee the various functions of the food services operations by protecting food quality and safety, applying nutrition principles to food purchasing, storage, and preparation, and managing their workforce and operational budget (Association of Nutrition and Foodservice Professionals, n.d.).

The CDM certification entails passing a board examination administered by the Certifying Board of Dietary Managers (CBDM) upon graduating from a didactic post-secondary career-technical education program approved by the Association of Nutrition and Foodservice Professionals (ANFP), that is, CBDM's parent organization (Certifying Board of Dietary Managers, n.d.). According to the ANFP, the vast majority of CDM preparatory programs are administered by community colleges across the US. The US Bureau of Labor forecasts faster than average growth in food service management jobs in the current decade (US Bureau of Labor Statistics, n.d.a). However, the internal statistics from the CBDM show that in recent years, approximately 30% of CDM program completers did not sit for the credentialing examination within the twelve months following the attainment of their eligibility status. This phenomenon is intriguing given the candidates' significant investment of time and resources to achieve exam eligibility and is concerning for several reasons. According to data made available to the researcher, as of October 1, 2021, 79% of CDMs function in health care-related settings where overall employment is projected to grow much faster than the average for all occupations (US Bureau of Labor Statistics, n.d.b). CDMs are uniquely qualified to run the critical operational processes necessary to provide safe and nutritious meals and potentially enhance patient outcomes in health care settings across the US.

## **Literature Review**

A literature search of peer-reviewed articles across various disciplines failed to yield substantial data on the perceived barriers and challenges that influence academic preparatory program graduates' decisions not to take their credentialing board exams. However, this researcher reviewed recent studies revolving around identified obstacles to

professional exam performance and success in postsecondary education, including student anxiety and stress, available exam preparation time and resources, feelings of testing fear or self-confidence, receiving mentoring support, developing test-taking competence, and perceptions of a professional credential's value. This literature review also justifies the use of Azjen's (1991) Theory of Planned Behavior (TPB) as the appropriate observation lens through which this new study examines, interprets, and analyzes the influence of candidates' attitudes, norms, and perceived control on their willingness to sit for their credentialing exam.

**Malnutrition and the Effects of Tailored Interventions.** The prevalence of malnutrition is rising in hospitalized U.S. patients (Corkins et al., 2014) in which it is associated with extended hospital stays and higher morbidity, mortality, and health care costs (Beck, 2015; Curtis et al., 2017). Malnutrition also negatively affects long-term care residents where it is associated with a decline in the activities of daily living and an increased likelihood of mortality (Burge et al., 2013; Nakazawa et al., 2013). On the other hand, individualized nutritional interventions such as food texture modifications (Seemer et al., 2021) and a patient-centered food service system (Croghan et al., 2013) can improve residents' nutritional status, health, and quality of life.

Several studies have provided promising positive outcomes of tailored nutritional interventions targeting preventing or resolving malnutrition in health care settings. Strategies that grant patients decision-making autonomy in food consumption matters could be crucial to success, including menu and food delivery system upgrades reflecting residents' preferences and increased satisfaction with their dining experience. Sathiaraj et al. (2019) shared similar viewpoints on the efficacy of individualized patient-centered interventions in promoting energy and protein intake in cancer patients susceptible to treatment side effects such as loss of appetite and dysphagia. Seemer et al. (2021) concur with the strategy, arguing that individualized food offerings, including texture modifications and freshly prepared nutritional supplements by the facility's food services staff, improve energy and protein intake and quality of life.

Although the literature presents abundant evidence about the merits of patient-centered food and nutrition services in improving patient outcomes, it does not duly address the roles, responsibilities, credentials, competencies, and critical functions of the CDM as a government-designated leader of the multidimensional and complex food procurement, production, and service systems of licensed health care institutions.

**Exam Anxiety. *Stress from External Demands and Perceptions of Readiness.*** Literature abounds on the barriers inhibiting students' performance on postsecondary or professional exams, with several studies linking stress and exam anxiety to poor exam performance. Kremer (2016) suggests correlations between school-work-family demands, student-perceived burnout, and feelings of emotional exhaustion, with evidence further highlighting women being more affected by inter-role conflicts than men. Similarly, Webster (2020) accentuates intrinsic and extrinsic student-perceived determinants of failure: heightened stress levels and lack of confidence in the exam process, feeling ill-prepared, and waiting too long after graduation. Brown et al. (2015) also agree that exam

timing matters. They observed that the longer medical laboratory scientist and technician candidates waited after program graduation, the lower they scored on their respective credentialing exams. Khoshhal et al. (2017) corroborate the prevalence of exam-related anxiety in postsecondary education and identify contributing risk factors. Their cross-sectional study conducted on graduating 5th-year medical students just before their midcourse exams revealed that 65% of participants suffered from exam anxiety. Students identified studying all night before the exam and extensive course load as the two leading stressors. Although the dietary management certification exam requirements may not be as taxing as those imposed by more rigorous medical school curricula, contributors to exam-related stress may be universal in all students. Scrivner (2016) took a physiological-biochemical perspective to correlate students' exam-related stress and their perceptions of preparedness. They linked a rise in cortisol levels (a measure of stress response) in saliva samples from participants to students' perceptions of exam preparedness.

***Fear of Failure.*** Fear of failure may also augment exam anxiety. Students who registered high anxiety levels through Khoshhal et al.'s (2017) research questionnaires reported that the fear of failing a test was related to the lack of time they dedicated to studying. Zhang et al. (2018) argue that academic procrastination, best described as postponing a purposeful action despite foreseeing adverse effects from the delay, was a widespread behavioral problem among their large sample of undergraduate students enrolled in health professions programs. They further suggest that fear of exam failure has an inverse relationship with self-esteem and self-efficacy for self-regulation.

***Self-efficacy and Confidence in Exam Readiness.*** Studies suggest that exam candidates' perceived level of preparation is associated with their test-taking anxiety. Access to additional learning materials may have benefited graduates of a Medical Laboratory Science program. Upon surveying a small group of program completers within the last five years, Webster found that respondents deemed a review manual and exam simulator as helpful resources (61.8% and 71% of respondents, respectively). Exam review materials such as study guides, mock board exams, and other coaching methods may also be favored by academic administrators in other allied health care programs to promote student success. Nordquist et al. (2017) found that 93% of surveyed directors of dental hygiene programs from various schools across the United States supported their students in preparing for their board certification exam with specific strategies and tools. In another study, Coohy and Cummings (2019) also found a strong correlation between mentoring support, on the one hand, and students' test-taking confidence and test anxiety.

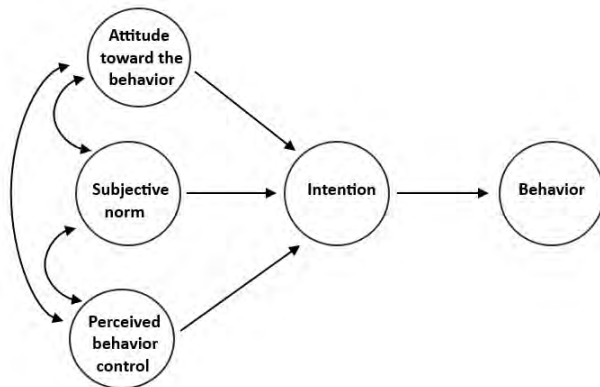
## **Theoretical Framework**

Building upon the theory of reasoned action (TRA), which limits drivers of people's behaviors to their attitudes, norms, and intentions (Fishbein & Ajzen, 1975), the theory of planned behavior (TPB) proposes perceived control over the performance of a behavior as a major determinant of intention or as a promoter of an actual engagement in

the behavior (Ajzen, 1991). It suggests that believing one has control over a behavior is highly associated with performing that behavior. Figure 1 displays the relationships between the constructs of TPB, as suggested by Ajzen (1991).

**Figure 1**

*The Theory of Planned Behavior*



Note. Figure 1 displays the connections between the constructs of the theory of planned behavior. Source: Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.

Assessing the utility of TPB in the context of the dietary management certification exam may be an unprecedented endeavor. No previous studies may have investigated students' attitudes, norms, intentions, and perceived control in the context of exam hesitancy. Instead, many evaluated the impact of TPB's elements on students' intentions and ensuing academic behaviors. The literature contains mixed results in this regard. Kyle et al. (2014) found no correlations between first-year psychology students' behavioral intentions, attitudes, and norms. They, however, acknowledged that perceived behavioral control could influence students' 'aim to achieve a high final score in their studies. Skoglund et al. (2020) assessed the influences of the attitudes, beliefs, and perceptions of control on doctor of pharmacy students' intentions to attend lectures. They found individuals with positive attitudes toward lecture attendance were 30% more likely to have high intentions to do so.

In the student-exam relationship context, the literature provides insights into connections between student attitudes, challenges, norms, and behaviors and their levels of exam preparation and success. However, current literature still needs to address obstacles inhibiting exam-eligible candidates from actively seeking an opportunity to sit for their credentialing exam.

**Purpose and Research Questions.** The purpose of this study was to examine the underlying factors contributing to CDM program graduates' hesitancy in taking the

national board certification exam that would enable them to practice as credentialed food and nutrition professionals in health care settings.

Two research questions (RQ) guide this study:

1. What perceived barriers and challenges influence certified dietary manager preparatory program graduates' decisions not to take their credentialing board exam?
2. What similarities do non-test-takers share, and how do these align with the construct of the theory of planned behavior?

## **Methodology**

**Research Design.** This researcher adopted a phenomenological approach, which strives to shed light on the meanings, structure, and essence of lived experiences and events as perceived by the participants with no goal to generalize findings (Gall et al., 2015). The paucity of literature on credentialing exam hesitancy in health care professions justifies the researcher's choice of a phenomenological design as it aligns with this study's purpose of taking a first look at a phenomenon (Tavakol & Sandars, 2014). While this methodology offers many advantages, it is also known for notable drawbacks. On the one hand, phenomenology may deliver unique viewpoints, rich data, and profound understandings of the experiences of interest. On the other hand, it is susceptible to researcher-induced bias, which may challenge a study's validity and reliability (Regoli, 2017).

**Sample Population and Recruitment.** The study focuses on graduates from ANFP-approved CDM preparatory programs operating across the US during five consecutive fiscal years, starting on June 1, 2016, and ending on May 31, 2021. The study had only one inclusion criterion: not having taken the CDM board exam one year or more past achieving eligibility through graduation from an ANFP-approved didactic program. The researcher opted for the 12-month post-graduation period as a critical inclusion criterion because, according to the ANFP's unpublished official statistics, about 92% of the board exam takers typically do so within the first 12 months after their program completion. There are no exclusion criteria.

The source population included an estimated 1,300 members reported to the ANFP by their respective schools as program completers; the ANFP has provided a letter of cooperation granting the necessary permission to communicate with this population. Using purposive, convenience, and snowballing sampling methods, the researcher recruited a sample of 21 CDM program graduates. This number is deemed adequate for phenomenological studies (Guetterman, 2015). The participants may differ in age, socioeconomic status, culture, and other characteristics. Their association with their academic program's delivery type (in-person, distance education, or hybrid) presents another source of diversity among participants. Participants may also differ in future employment eligibility, depending on which state they may consider for seeking employment, as some states mandate the CDM credential requirement while others do



not. Given the sensitive nature of the study, the researcher offered a \$25 gift card to prospective volunteers who completed all three steps of this study: informed consent, interview, and follow-up interview transcript verification. This study was approved by A.T. Still University's institutional review board.

**Materials and Procedures.** The ANFP's administrative office emailed the prospective participants, inviting them to take part in the study. This email outreach featured the study's purpose, participants' role and extent of commitment, the researcher and their assurance of anonymity and confidentiality throughout the process, the study's potential benefits to the profession, and the monetary incentive. Volunteer participants entered the sample pool by clicking an embedded link in the invitation email, which opened a Google form where they entered their name, email address, phone number, and the best days and times for a 60–90-minute interview. A link to a DocuSign informed consent form was emailed to interested participants with instructions on returning their signed consent with their desired meeting dates and times for an interview appointment.

**Instrumentation.** The researcher collected data through semi-structured interviews, a commonly utilized data collection instrument in qualitative research. To safeguard this study from potential personal biases and in alignment with the TPB, they developed a seven-question interview guide, including probe questions (see Appendix A), and tested its functionality with pilot interviews with two participants recruited by convenience sampling, with similar characteristics to the target sample group. The researcher collected demographic information during the interview session and before asking the planned interview questions (see Appendix B).

**Data Collection.** To schedule interviews, the researcher contacted all 21 interested candidates, asking them to stay on standby and look out for a potential interview appointment. They proceeded to schedule interviews in the order of receiving the completed Google forms. To best manage the systematic progression of their data collection and simultaneous coding of the emerging themes and to accommodate candidates' scheduling needs, the researcher clustered their interview scheduling with two participants at a time. They continued interviewing new participants and stopped when their thematic coding alerted the attainment of data saturation. Data saturation occurs when the gathered information becomes redundant, signaling the researcher that further collection may be unnecessary (Faulkner & Trotter, 2017). Halting data collection at saturation is an accepted methodological practice in qualitative research (Saunders et al., 2018).

Audio-visually recorded interviews took place over Zoom. The researcher first developed a rapport with the participant while asking demographic questions and then started the interview. They took notes during the interview process to facilitate the transcription and analysis. As they conducted each interview, the researcher simultaneously coded for emerging themes.

**Saturation.** As the researcher inductively extracted and organized the emerging information from the abstracts on a spreadsheet, they noted the common trends across the interview responses. The first three interviews generated about 80% of the data. They continued interviewing new respondents and added 20% of the codes from interviews 5 to 8. Ptps 6 and 7 resonated with their previous counterparts on the existing codes. Ptp 8 “closed” the circle of themes by echoing the first participant’s wish to keep the CDM career option in plain view while embarking on the quest for the RDN credential.

## **Results**

This researcher started their data analysis by generating verbatim textual transcripts of the interviews through Zoom. To ensure the accuracy of the transcription, they undertook data cleaning through multiple readings while watching and hearing the recordings to detect participants’ voice changes or body language and to review their notes for possible errors and missed details. They removed duplications, corrected typographical, spelling, or grammatical errors, filled in possible omissions, and removed irrelevant information. Next, they sent the transcript to the respective interviewees, asking them to check and correct any discrepancies. After member-checking, the researcher conducted manual inductive coding by grouping patterns of codes into categories to identify emerging themes. They documented the categories in a codebook (see Appendix C) and analyzed each theme by evaluating similarities and differences while looking for meanings in the contexts of the research questions and the TPB constructs.

**Sample Characteristics.** A total of eight participants with a mean age of  $43.37 \pm 4.9$  years are included in this study. They are identified as Ptp 1, Ptp 2, Ptp 3, Ptp 4, Ptp 5, Ptp 6, Ptp 7, and Ptp 8. Table 1 displays participants’ demographic characteristics.

**Table 1**

<i>Sample Demographic Characteristics</i>		
Demographic Characteristic	n	%
Age		
20-29	0	0%
30-39	3	37.5%
40-49	3	37.5%
50-59	2	25%
59 and over	0	0%
Gender		
Male	1	12.5%
Female	7	87.5%
Non-binary	0	0%
Other	0	0%
Ethnicity		
Non-Hispanic American Indian or Alaska Native	0	0%
Non-Hispanic Asian	0	0%
Non-Hispanic Black or African American	1	12.5%
Non-Hispanic Native Hawaiian or other Pacific Islander	1	12.5%
Non-Hispanic White	5	62.5%
Hispanic or Latino	1	12.5%
Family responsibilities		
Head of household	2	25%
Parent	4	50%
Other	3	37.5%
Educational level		
Secondary degree	0	0%
Postsecondary certificate or degree	4	50%
Bachelor's degree	2	25%
Other degree	2	25%
Current employment status		
Unemployed	3	37.5%
Full time	3	37.5%
Part time	2	25%
Current employment nature		
Health care	3	60%
Food and nutrition field	(2)	
Non-food and nutrition field	(1)	
Other field	2	40%
Hours worked per week		
Equal or less than 20	2	25%
More than 20	3	37.5%
Employment status upon graduation from CDM program		
Unemployed	4	50%
Employed in food and nutrition	4	50%
Other field of expertise		

Registered Dietetic Technician	1	12.5%
Earth sciences	1	12.5%
Business administration	1	12.5%
Demographic Characteristic	n	%
Cook	1	12.5%
Certified Nursing Assistant	1	12.5%
Multimedia design	1	12.5%
Anticipated practice location at CDM program enrollment		
School food services	2	25%
Health care food services	6	75%

**Research Question 1: Thematic Findings. *Interest in the Dietary Management Field.*** The examination of participants' lived experiences began with exploring their reason for pursuing a profession in the dietary management field. Most enrolled in a CDM program because they had previously learned how good nutrition leads to positive health outcomes. Participants reported being interested in the field due to their heightened appreciation, related to personal experiences, of nutrition's impact on their or their family members' positive health outcomes. Table 2 summarizes participants' interest in the dietary management field.

**Table 2**

*Interest in Dietary Management*

Theme code	Parent codes	Child codes	Participant quotes
Interest in dietary management	Food and nutrition	Positive health outcomes	"My research focused on pesticide use and nutritional outcomes or health outcomes in children."
		Clinical work	"So, I just kind of started off on the journey towards a more clinical career."
		Helping others through food and nutrition	"My goal is to help people out there."
	Education	Self-education	"I'm just trying to educate myself as much as I could."
		Helping others through education	"I love helping people become healthier, and it's just, it's very rewarding."
	Work experiences	Past work	"I was cooking at a nursing home for almost two years."
Worksite encouragement		"The executive director at my job had actually approached me about it, about taking the classes, and they were going to pay for it."	
Concurrent work		"I had been doing it since I was in high school, so it just seemed like the only direction to go."	
Positive academic	Student diversity	"There were so many different walks of	

Theme code	Parent codes	Child codes	Participant quotes
	experiences	Learner support	life, and I loved it.” “They made everything so easy. I think everything that they did was good, I learned a lot....”
		Peer support	“I felt like I instantly belonged, and we were all a team, supporting each other through the program.”
		Adequate preparation	“I think that they did a great job in terms of preparing us.” “I feel that I was very well prepared for the exam.”

***Internal Barriers to the CDM Exam.*** While personal health issues hindered one participant, the conscious selection or the discovery of alternative career paths was a more common barrier to the CDM for many others. Citing fewer managerial responsibilities and ample gainful employment opportunities, Ptp 2 had already decided to transition into a nursing career. Ptp 1 had achieved the registered dietetic technician certificate and contemplated diving into clinical practice. Ptp 5 also favored a registered dietetic technician career, while they were, along with Ptp 8, determined to pursue their education to attain the RDN credential. For many respondents, pursuing the CDM credential had also lost some luster due to negative field experiences. Table 3 summarizes the internal barriers to the CDM exam.

**Table 3**

***Internal Barriers to the CDM Exam***

Theme code	Parent codes	Child codes	Participant quotes
Internal barriers to the CDM exam	Personal health	Illness-induced poor immunity	“I was immune- compromised.”
		Ongoing illness	“I do have a health situation and my legs remind me of that every day.”
	Alternative career paths		Favors clinical vs managerial work
Favors the registered dietitian nutritionist path			“What I want to do is go back to school now and try to do my RD, continue my education, but in the clinical field.”
Favors the registered diet technician path			“Because my desire was to do the clinical for the DTR.”
Favors the registered nurse path			“The differences in responsibility, how much they actually matter to me.”
Negative field experiences		Stressful work conditions, lack of support	“Having support from other departments would be helpful because it’s a lot for one person to juggle.”
		Concerns about employment	“Nobody was hiring at that time for the food service director or anything in the in that field.”

Theme code	Parent codes	Child codes	Participant quotes
	Exam anxiety	Perception of exam readiness	“I really just didn’t feel well-prepared. I felt like I had more diet technician skills by the time I left than being comfortable with taking the CDM.”
		Fear of failure	“I’m happy to test; it’s not scary for me.” “Maybe I was kind of scared too to take it, knowing that it’s more of a responsibility.”

***External Barriers to the CDM Exam.*** The pandemic may have significantly impacted the respondents’ ability to pursue the CDM exam. During their last semester, some felt disconnected from their academic program as course delivery changed to a fully remote modality. Others were confused about their exam registration and execution logistics. The cost of the exam was another common barrier identified by most participants. Ptp 2 argued that the exam cost did not justify the value they placed on the CDM credential to promote them to take active measures to prepare and sit for it. The vast majority (80%) of respondents found the exam registration fee to be the most prohibitory barrier to their CDM exam, given their academic program’s tuition burden, personal financial limitations and family obligations, their fear of failure, and the resulting imperative to repay to retake the exam, and potential CDM credential maintenance fees. Table 4 summarizes the external barriers to the CDM exam.

**Table 4**

***External Barriers to the CDM Exam***

Theme code	Parent codes	Child codes	Participant quotes
External barriers to the CDM exam	Pandemic	Remote classes	“All my classes went remote.”
		Limited exam accessibility	“It did not seem like there were many remote opportunities, and that’s what I really would have needed.”
		Fear of illness	“I was scared to really go out in public and take the exam.”
		Conveyed workplace stress	“We would have speakers come in, and they were stressed. They were uncertain about their jobs.”
		General uncertainty	“It was the middle of Covid, so I didn’t know where anything was going, so I didn’t pursue anything.”
		Vaccination mandates	“A lot of them (employers) were asking for Covid shots, and I do not have the shots.”
		Field experience interruption	“I feel Covid was a big influencer. Not having the full experience in my internship.”
	Exam cost	Cost vs value of credential	“Leveraging the cost relative to my desire to stay in the field... I could have taken it

Theme code	Parent codes	Child codes	Participant quotes
			if I was willing to...if I intended to stay in the field.”
		Cost vs tuition and personal finances	“I still want to be a CDM. I mean, there’s a lot of good that comes out of it.”
		Cost vs fear of failure	“It was a little bit financially hard for me. Plus, I had to buy books.”
		Cost vs family obligations	“I couldn’t pay for it. if I didn’t pass it then I would have to spend another \$\$\$.”
		Lack of financial support	“Being a single parent and being the only provider for my child, bills and other stuff took precedence over being able to pay for the test.”
		Cost vs credential maintenance	“I did think that this was something that the facility should help with.”
		Cost vs future CDM earnings	“You’re going to have to keep up your CEUs. You’re going to have to keep up your annual fees after you become a CDM. And I can’t even afford that.”
			“I could earn more money in a factory than I can earn as a CDM in my area, which is pretty sad.”
	Perceived CDM job features	Taxing work conditions	“The stress of balancing, being part of leadership, having people under you, having a role which impacts people’s lives.”
		Job availability	“There wasn’t anything in the area that I lived in.”
	Time lapse	Time constraints for exam review	“Obviously, I’d have to get the study guide and do a lot of reviewing because it’s been 3 years since I have taken the courses...that’s a lot of time. It’s going to need a lot of reviewing.”
		Family responsibilities vs exam review	“Another deterrent was that my son is in college, too, so I was just trying to put him through college.”
	Uncertainties about exam logistics		“I think maybe lack of information. I think if I had received any link to go and take my exam, because, even though up until now I don’t know how I can take the exam.”
	Negative academic influences	Diet Technician program prioritization	“I felt like they emphasized the Diet Tech...I felt like there was bias.”
		Lack of review course	“Maybe if there was a review class on top of the internship that would have put me on a path which could take me directly (to the CDM exam) after the semester was over.”
		Lack of preparation for employment and job placement assistance	“I definitely feel like if there was more push, and we received more assistance and reassurance, and help with finding placement after, because that was a big

Theme code	Parent codes	Child codes	Participant quotes
		Lack of financial support	thing, too.” “If a facility is paying for them to take the classes, see if they’ll pay for them to take the test.”
		Lack of communication and guidance on exam logistics	“...And again, you are on your own.”
		Limitations of remote program delivery	“Everything was on online, even our online group chats were online, never really connected face to face.”

**Participant Dispositions.** Interviewees’ opinions and feelings about their roles vis-à-vis their exam barriers spread broadly. Ptp 1 had their heart set on the clinical nutrition field of practice. Thus, they achieved the registered dietetic technician credential through the Accreditation Council for Education in Nutrition and Dietetics. However, they regret not adding the CDM credential as a value to their career. Another participant wished they had taken more decisive actions to prepare to pay for the exam financially; another regretted not contacting their academic program leaders for logistical guidance. Table 5 summarizes participants’ dispositions toward the CDM exam.



**Table 5***Participant Dispositions*

Theme code	Parent codes	Child codes	Participant quotes
Participant Dispositions	Regrets	Self-responsibility for learning	“But I could have stayed true to my values and said I’m going to take this exam.”
		Lack of prioritization	“I think my prioritizing probably should have been a little on timing to do it. I just should have kind of put it first.”
		Rethinking program and course features	“I think my prioritizing probably should have been a little on timing to do it. I think that really deterred me.”
		Lack of peer-to-peer communications	“A little bit more communication with the peers in the classes...It would be nice to see the classmates.”
		Saving to pay for the exam	“I probably could have looked to see if there was somewhere that I could cut a little bit of cost somewhere to save money.”
	Control over barriers	Internal barriers	“I think it was out of my control.” “I had full control over all of it (the worry, the stress).”
		External barriers	“I can’t say I had much control over any of those factors.”
	Motivators	Goal orientation	“Yeah, there is a big thought towards re-pursuing that pathway.”
		Love of field	“I’ve got to be a part of something truly amazing that has helped or is helping so many adults and children with nutrition.”
		Resume enhancement	“If somebody told me that it was beneficial to me to also present the certificate of completing the CDM exam, then I would do it just for a leg up.”

**Research Question 2: Thematic Findings. *Interest in Dietary Management Field.*** Participants presented with diverse backgrounds across demographic traits. Still, they shared one common interest: they loved one or more aspects of food, nutrition, cooking, and the healing capacities of sound nutritional practices. Furthermore, many shared their love of the field for its opportunities to serve others through their knowledge and expertise.

***Internal and External Barriers to the CDM Exam.*** Participants offered converging insights into CDM exam candidates’ plight. Many shared feelings of stress engendered by family and work obligations and fear of failure. Others expressed negative views they had developed through firsthand experiences or second-hand reports about the

hardships of the CDM job functions and the lack of due job site support. No participant escaped the pandemic's impact on their CDM goal. Course and field practice interruption and changes in delivery modalities affected a significant percentage of the group. However, the common denominator was the pandemic-induced uncertainty about one's plans and activities. Exam cost considerations were also on almost everyone's radar except for one person who was financially supported through their military affiliation. To all others, regardless of their demographic features, cost presented itself as a shared significant barrier with many facets affecting their financial health. Also, independent of demographics, all participants agreed that the longer the time lapse between their program completion, the harder it was for them to rekindle their original CDM exam goal with reenergized efforts. Participants also placed a high responsibility on their academic programs, some demanding better preparation, others seeking active follow-up and guidance toward exam registration.

## **Discussion**

Several barriers and challenges, spanning internal and external factors, influenced participants' hesitancy in sitting for their exams beyond the one-year mark post-graduation. Among the internal factors, one common cause for hesitation was participants' exposure to the challenges CDMs face when performing their roles in health care environments during employment or supervised practice. According to some participants, having watched or experienced stressful work conditions and lack of support from higher offices for their role as managers of food service operations discouraged or even deterred them, even while eligible candidates, from pursuing the CDM career goal they set forth when entering their academic programs. These experiences led participants in the latter predicament to contemplate other career options, such as nursing. Other participants reported stopping short of the exam because they had pre-existing plans to use the CDM credential as a springboard to become a registered diet technician or RDN.

All participants highly regarded the CDM and other food- and nutrition-related professions, such as the diet technician and the RDN. While personal illness surfaced as an isolated inhibitor to the active pursuit of the exam, anxiety rooted in perceptions of exam readiness and fear of failure was a common concern to most participants. The prevalence of exam-related anxiety and fear of failure in higher education are also highlighted by Khoshhal et al. (2017). Although exam anxiety in this study's population did not pertain to exam performance, the finding is still consistent with Webster's (2020) assertion that feeling stressed and ill-prepared can affect students' ability to succeed on an exam and Scrivner's (2016) assertion about the existence of a significant correlation between students' perceptions of preparedness and their exam-related stress.

On the external front, participants alluded to the COVID-19 pandemic as a significant challenge that affected their drive to pursue their credentials. Their pandemic-related experiences included fear of illness, vaccination mandates unwelcomed by some, imposed remote class delivery modes, interrupted supervised field practices, limited exam accessibility, and a general sense of uncertainty that many found hard to navigate. The pandemic's significant adverse effect on health care workers' physical and mental

well-being is extensively documented in the literature (Billings et al., 2021; Chhablani & Choudhari, 2022; Vizheh et al., 2020).

The exam cost and future fees and complexities associated with maintaining the CDM credential also surfaced as potential barriers for this population. In candidates' views, the involved costs to attain and maintain the CDM credential, from tuition to board exams and continuing education fees, outweighed their desire to stay in the field and potential future earnings. Echoing the findings from Webster and Brown et al., this study's participants' experiences suggest that exam timing vis a vis graduation time could influence students' confidence in their potential success or testing outcomes. Their responses cited needing more time for exam review activities due to family and work obligations.

Students' academic experiences were found to be critical external factors. All participants expressed anguish at the absence of continued involvement and support from their educational programs. They wished they had more support in CDM exam preparation throughout their schooling, especially during the culminating phase of their student experience. Participants defined support as an exam review course and continued communication and guidance through students' post-graduation steps leading to the exam registration process. Current literature strongly corroborates the premise that academic guidance and mentoring of exam candidates may lower candidates' testing anxiety and improve their test-taking confidence and competence (Coohey & Cummings, 2019).

This current study shows that certified dietary management and other food- and nutrition-related fields are highly appreciated by the population pursuing the CDM credential. Despite facing challenges during and after program completion, participants remained fond of the dietary management field. However, some began exploring alternative health care-related career pathways. Their interest in dietary management was fueled by many motivators, including participants' pursuit for self-education, positive academic experiences, and worksite encouragement. One overarching theme in this arena was the participants' strong belief in the importance of food and nutrition services in improving their personal and family members' and patients' health. The latter echoes findings from current literature on the significant impact of nutrition on clinical outcomes (Beck, 2015; Crogan et al., 2013; Sathiaraj et al., 2019). Ajzen's (1991) TPB holds for most participants who had a positive view of the dietary management field and remained open to eventually taking the CDM exam. Participants' lack of action in registering and sitting for their board exam stemmed from their perceived absence of control over their internal and external barriers. They did not take action because they felt helpless against their challenges.

## **Limitations**

This study should be interpreted within the context of certain limitations. The paucity of existing research and the subsequent vacuum of factors contributing to credentialing exam hesitancy constrain the researcher's ability to explore the full scope of this phenomenon systematically. The convenience sampling methodology was a limitation since participation was restricted to CDM exam candidates whose institutions

had reported their names to the ANFP as program completers during the study's target timeframe. Although the semi-structured interviews yielded rich and in-depth insights, the small sample size of interviewees may not have produced comprehensive data to answer the questions leading this study exhaustively. Despite the small sample size inherent to qualitative inquiry, the researcher assured data saturation with redundancy and validated content accuracy and authenticity with member checks.

Zoom's virtual environment may have inhibited some participants from full disclosure. The researcher attempted to remedy the situation by establishing trust and creating a private and intimate connection with each participant during their communications. They took notes to capture details with potential for loss due to their physical separation in Zoom, then played back the videos to observe any meaningful non-verbal expressions that provided relational context.

It is also possible that the researcher's credentials as a food and nutrition expert and CDM program director may have influenced participants' perceptions of their interviewer's expectations, leading them to tailor their responses significantly and influencing the data provided. The researcher addressed this issue by assuring each participant they were solely acting as a researcher for their academic pursuit. In the same context, the researcher's field expertise led to investigator bias. To mitigate such threats, this researcher remained critically conscious about their thoughts by self-reflecting and journaling throughout their data collection and analysis, aiming to ensure transparent positionality and enhance their findings' credibility and trustworthiness.

Given that the sample recruitment method solely relied on volunteer participants who signed up for interviews, data triangulation based on variables with potential effect on results, such as participant geographical location, CDM program graduation years, or program delivery type, was challenging; these have limited generalizability. However, since generalizability is not the goal of qualitative studies, this researcher used an audit trail to ensure the transferability of this study's findings to other populations.

## **Recommendations for Professional Practice and Future Research**

This study is a "first look" into the lived experiences of credentialing exam candidates in dietary management. Despite its limitations, the study yielded robust data necessary to uncover what truly exists in this population and, therefore, could serve as a catalyst for future research and a foundation needed for reform in CDM exam preparatory school programs and industry practices. It may heighten the awareness of leaders of health care institutions, academic program directors, and faculty members in current and future CDM programs about the challenges faced by future dietary managers. Leaders can harness this study's findings to support aspiring CDMs throughout their journey toward credentialing and employment. In turn, the ANFP may provide additional backing to its approved programs to make CDM exam review materials and processes easily accessible to all candidates. Concurrently, these findings should inform administrative decisions, necessitating academic program leaders of allied health care professions to examine the potential issue of board exam hesitancy within the populations of program completers in their respective disciplines.

Future research should rely on larger sample sizes and utilize mixed-methods or quantitative approaches to measure the influence, over time, of the internal and external barriers to the credentialing exam uncovered in this study. Ranking these barriers by their influence on exam hesitancy could reveal any potential interaction effect between these factors, which could help prioritize where interventions may be well served.

## **Conclusions**

Dietary services management certification exam candidates encounter numerous internal and external obstacles that impede their pursuit of the esteemed CDM credential. Candidates continue to value their career choice as a means for self-development. They strongly believe in the critical role of nutrition in health promotion and strive to affect people's lives positively. However, many stop short of registering for their credentialing exam, overwhelmed by family and work constraints and the lack of financial resources to meet the involved costs. At the same time, they are anxious about the exam due to feeling ill prepared and the monetary losses they would incur in the event of failure. They also feel unsupported by their preparatory academic programs and current health care food services employers. Candidates' exam hesitancy is augmented by negative perceptions of the CDM's stressful work conditions and unattractive employment prospects, leading many to consider an alternate career. In addition, pandemic-related restrictions exacerbated many candidates' struggles to overcome their CDM exam barriers. In line with the TPB, candidates' attitudes, norms, and perceived lack of control over challenges prompted their inaction toward exam preparation and registration.

This study may be the first to examine factors contributing to credentialing exam hesitancy in prospective dietary managers. As such, its findings have direct implications for the academic preparation and career technical - education programs of CDMs, primarily housed in community colleges across the United States. This researcher hopes these findings should elicit active remedial practices from educators and program administrators, including guiding their graduates while closely monitoring their progress through the exam preparation, registration, and execution processes. Administrators of health care food service operations, the principal site of CDM employment, should actively seek opportunities to provide favorable working conditions with enhanced decision-making autonomy and commensurate compensation sought by prospective CDMs.

The current climate of rising demand and growing shortage in health care staffing amplifies this study's relevance (University of Southern California, 2023). This study features broad implications for the educational preparation and workforce transition of future health care workers in other disciplines with a credentialing exam requirement as a career entry condition, such as nursing, physical, occupational, and respiratory therapies. Its findings raise questions about potential board exam hesitance and the prevalence of barriers hindering respective candidates from taking their exams and serve as a springboard for new inquiries.

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## Appendix A

### Interview Guide and Matrix of Associations

Interview questions	Research question	Construct	Theoretical framework
<p>1. Tell me about how you became interested in dietary management. What motivated you to select it as a field of pursuit?            Probe question: What do you like about dietary management?</p>	<p>What perceived barriers and challenges influence certified dietary manager (CDM) preparatory program graduates' decisions not to take their credentialing board exam?</p>	<p>Vision            Motivation            Drive            Value placed in profession</p>	<p>Theory of planned behavior (TPB).            Ajzen, I. (1991).            The theory of planned behavior.  <i>Organizational Behavior and Human Decision Processes</i>, 50(2), 179-211.</p>
<p>2. Thinking about the early times after graduation, describe internal factors, circumstances, barriers, or challenges that inhibited you from registering for your credentialing exam?            Probe question: How much control did you have over such barriers?</p>	<p>What perceived barriers and challenges influence CDM preparatory program graduates' decisions not to take their credentialing board exam?</p>	<p>Perception of intrinsic challenges            Behavior inhibition</p>	<p>TPB</p>
<p>3. Describe external factors, circumstances, barriers, or challenges that inhibited you from registering for your credentialing exam?            Probe question: How much control did you have over such barriers?</p>	<p>What perceived barriers and challenges influence CDM preparatory program graduates' decisions not to take their credentialing board exam?</p>	<p>Perception of extrinsic challenges            Behavior inhibition</p>	<p>TPB</p>
<p>4. Tell me about your experiences as a student. What could academic program leaders have done differently to prepare and encourage you to sit for your board exam soon after graduation?            Probe question: Was there anything your program instructors could have done</p>	<p>What perceived barriers and challenges influence CDM preparatory program graduates' decisions not to take their credentialing board exam?</p>	<p>Perception of preparedness            Self-efficacy            Exam fear and anxiety            Perception of control over behavior</p>	<p>TPB</p>

to alleviate your hesitation?

5. While in the program, was there anything you wish you possessed or had done differently that could have led you to take the board exam soon after graduation?

What perceived barriers and challenges influence CDM preparatory program graduates' decisions not to take their credentialing board exam?

Perception of preparedness  
Self-efficacy  
Exam fear and anxiety  
Perception of control over

TPB

6. Tell me more about your plans for taking the CDM board exam.

Probe question:  
What would motivate you to take active steps towards that goal?

What perceived barriers and challenges influence CDM preparatory program graduates' decisions not to take their credentialing board exam?

behavior  
Vision  
Motivation  
Drive  
Value placed in profession

TPB

7. Would you like to share any further comments? Do you have any questions?

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## **Appendix B**

### **Demographic Questions Asked to Participants Before the Interview**

- What is your age?
- What is your self-identified gender?
- What is your self-identified ethnicity?
- What family responsibilities do you have (head of household, parent, or other)?
- What is your educational level (secondary, post-secondary, certificate, undergraduate or other degree)?
- Do you currently work? What do you do? How many hours per week do you work?
- Did you have the same job when you first graduated from your dietary management program?
- Do you have another field of expertise?
- What was your anticipated practice location and setting when you enrolled in your CDM program?

## Appendix C

### Codebook for Theme, Parent, and Child Codes

Theme code	Parent codes	Child codes
Interest in dietary management	Food and nutrition  Education  Work experiences  Positive academic experiences	Positive health outcomes Clinical work Helping others through food and nutrition Love of cooking Self-education Helping others through education Past work Worksite encouragement Concurrent work Student diversity Learner support Peer support Adequate preparation
Internal barriers to CDM exam	Personal health  Alternative career paths  Negative field experiences  Exam anxiety	Illness-induced poor immunity Ongoing illness Favors clinical vs managerial work Favors the registered dietitian nutritionist path Favors the registered diet technician path Favors the registered nurse path Stressful work conditions, lack Concerns about employment Perception of exam readiness Fear of failure
External barriers to CDM exam	Pandemic  Exam cost  Perceived CDM job features  Time lapse	Remote classes Limited exam accessibility Fear of illness Conveyed workplace stress General uncertainty Vaccination mandates Field experience interruption Cost vs value of credential Cost vs tuition and personal finances Cost vs fear of failure Cost vs family obligations Lack of financial support Cost vs credential maintenance Cost vs future CDM earnings Taxing work conditions Job availability Time constraints for exam review Family responsibilities vs exam review

	Negative academic influences	Diet technician program prioritization Lack of review course Lack of preparation for employment and job placement assistance Lack of financial support Lack of communication and guidance on exam logistics Limitations of remote program delivery
Participant Dispositions	Regrets	Self-responsibility for learning Lack of prioritization Rethinking program and course features Lack of peer-to-peer communications Saving to pay for the exam
	Control over barriers	Internal barriers External barriers
	Motivations	Goal orientation Love of field Resume enhancement