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Employment Opportunities For Nutrition Science Graduates With A Focus On The Food And Beverage Industry

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Fowler, Ansley, "Employment Opportunities For Nutrition Science Graduates With A Focus On The Food And Beverage Industry." , Georgia State University, 2020.
https://scholarworks.gsu.edu/nutrition_mastersprojects/20

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Career options for nutrition undergraduate students postgraduation with a focus on food and beverage industry opportunities: a literature review.

Fowler, AK

Objective: The transition from student to professional is a stressful and daunting time. Navigating the options (dietetic internship, graduate degree or workforce) that are available is one of the contributing factors of stress. This review of the literature is to analyze what options are available with an emphasis on opportunities in the food and beverage industry.

Methods: Galileo Scholar database was searched for combinations of the following search terms: nutrition science, career, undergraduate, nutrition students, nutrition in food and beverage industry, food and beverage industry and food policy. Papers were selected based on paper titles and on relevance of the abstracts.

Results: 25 papers were included in this review. The studies show that there is a wide variety of post-graduate career opportunities. Specifically, for food and beverage industry, the studies highlight several areas of opportunity where it would be beneficial to have someone with a nutrition background involved.

Conclusions: Nutrition graduates entering the workforce have a unique set of skills that would make them marketable to food and beverage industry. Whether contributing to the concept development with marketing and research and development or helping the business navigate the public health concerns (such as added sugar), these are conversations that those with nutrition backgrounds can be critical in participating and leading. Nutritionists and dietitians that work in the food and beverage industry are uniquely positioned as credible sources of nutrition information. Both industry and the consumer can benefit from this positioning.

Introduction:

The transition of any collegiate graduate with a bachelor's degree into the next phase tends to be difficult and fuel a lot of anxiety and uncertainty. What are some contributing factors to this stress? Having to make a decision that could be the catalyst to his/her future is probably one of many factors. For students who chose to major in a nutrition bachelor's degree are not exempt from these stressors. Nutrition undergraduate students sometimes have the impression that the main career path should be routed in a pre-professional track^{1,2,3}. If they do not choose to label themselves as "pre-medicine" or "pre-pharmacy" they must plan on applying to graduate school and/or a dietetic internship. What about those that want to use their coveted bachelor's degree to enter the workforce? Is that a possibility or a myth? While some advisors may lean towards this as a myth, there is untapped potential to enter the workforce in many areas, one being the food and beverage industry.

Not too long ago, nutrition and the food and beverage industry were viewed as opposite and competing forces. This narrative has shifted in the past few years but some hold to this narrative. This dated back to 1995 when New York Times reporter Marian Burros criticized the Academy of Nutrition and Dietetics for accepting any funding from industry groups and corporate sponsors⁴. Current day, there are still comparisons between the food and beverage industry and the tobacco industry^{4,5}. Also, conclusions have been drawn that the industry is infiltrating nutrition conferences and manipulating scientific evidence with no regard to public health^{4,5}.

The food and beverage landscape is changing more than ever. With this ever-changing industry, it is beneficial to challenge this outdated way of thinking. According to Mintel Global New Product Database, in 2016 there were 21,435 new products introduced into the marketplace in the United States which is the highest level of product releases since 2007⁶. With this steady increase, it should be imperative that those at the front lines have nutrition knowledge or know how to communicate nutrition-based concepts in a consumer-friendly way. Nutrition experts have opportunities in the food and beverage industry to be held as credible sources of nutrition information¹. They have the knowledge and expertise that can benefit both the consumer and the industry¹.

This literature review is to address the question, are there opportunities for nutrition students outside of pursuing a dietetic internship progressing to a clinical based career? This is an exercise to evaluate current literature to see what opportunities are available for nutrition students, investigate what researchers are saying about the cross-over of public policy and food and beverage industry involvement and shed light to the necessity of having nutrition professionals in the food and beverage industry.

Materials and Methods

To begin the preliminary review of relevant literature, the following search terms were identified: nutrition science AND career AND undergraduate, nutrition students AND career, nutrition in food and beverage industry, food and beverage industry AND food policy. The search was conducted February 2020 using Galileo Scholar database. Publications were used within the past 15 years in order to evaluate the evolution of the food and beverage industry. Only publications in English were accepted therefore, limited the geography to areas where English is the primary language (North America, Europe, Australia). Publications were not limited based on funding source since it was critical to evaluate all literature regarding the opinions of the food and beverage industry.

Results

The initial search resulted in 542,719 publications, including duplicates between the search combinations. Given the large number of publications that the search terms produced, the first 5 pages of the database was filtered through narrowing down to 400 publications. Paper titles were reviewed for relevance (including nutrition students career, food and/or beverage industry, front of pack labeling, health claims, food policy), 76 publications were relevant for further evaluation, abstracts were analyzed further with respect to nutrition students' career opportunities, food and beverage industry related to policy and the need for nutrition professionals in the food and beverage industry. This evaluation helped to identify a smaller group of papers to read in-depth and review. Twenty-five papers were ultimately included into the literature review.

Careers for undergraduate nutrition students

Navigating the career path in nutrition can be complex and daunting for nutrition students. There has been continued growth in the nutrition and dietetics workforce, with a predicted increase in positions from 6,600 in 2015 to 9,000 by 2020². Given this statistic, it is imperative that students are equipped to the wide array of career opportunities. Development of the workforce specific to nutrition and dietetic profession can focus on three distinct phases, including pre-enrolment, training and post-employment phases³. Hughes et al focused on the pre-enrolment phase and the importance of career paths that are presented³. Public awareness of the state of nutrition and dietetics careers and the perceptions of career prospects are all factors contributing to the pre-enrolment phase³. This will ultimately affect the development of nutrition and dietetic workforce³.

Seven of the 25 papers focused on the broad outlook of what career options are available for those entering the field as referenced in **Table 1**. Career options for nutrition students that were highlighted, from most mentioned to least mentioned: Registered dietitian nutritionist (RDN), clinical practice, public health, research or academia, food or beverage industry, sports nutrition, private practice, nutritionist, nutrition and dietetic technicians, registered (NDTRs), food service management, grocery or retail, regulatory or advocacy, school nutritionist, community or food banks, e-health or informatics, disease prevention, nutrition education and sustainability^{2,3,7,8,9,10}.

While these results highlight a wide variety of career opportunities, it is most common that nutrition students will mainly pursue the accreditation of an RDN (through a dietetic internship) and then onto clinical nutrition³. Even though some papers may mention a variety of careers paths, it was generally in the context of stating that students were unaware that the aforementioned career paths were an option or were not given any consideration^{1,2,3,9}. Three of the six papers looked at competencies that RDNs and NDTRs may not be aware of but that they could pursue. The three papers were from the Academy of Nutrition and Dietetics and the topics outlined were school nutrition, how to address food insecurity and nutrition informatics^{7,8,10}. A common thread among all seven papers looking at the pre-enrollment phase was characteristics making nutrition students successful in the workforce, no matter the field of entry. Those were critical thinkers, continuously learning, leadership, ability to rapidly adapt, high level communication, organizational skills and interpersonal skills^{2,3,7,8,9,10}.

Nutrition Involvement with Corporate Sponsorships

After investigating what career options were available, the focus narrowed in on the career opportunities in food and beverage industry. There is a London based group called Nutritionists in Industry (NII) who “aim to promote nutritionists and dietitians working in the food industry as credible sources of nutrition information, with knowledge and expertise that can benefit industry and consumers”¹. While this is supportive of nutrition professionals in the food and beverage setting, that has not always been the case^{4,5}. In 2013, a report was released from *Eat Drink Politics* that shared the disdain for involvement of corporate sponsors at the 2012 Food and Nutrition Conference and Expo. Michele Simons, author of the report and 2012 president of *Eat Drink Politics* states that the “food industry’s deep infiltration into the nation’s top nutrition organization is unacceptable” and “what is supposed to be a nutrition expo is now a junk food expo”⁵. Dietitians were polled on what corporate sponsorships were acceptable versus unacceptable. Most dietitians (>60% of participants) expressed that sponsorships such as Abbott, Aramark, National Dairy Council, McNeil Nutritional, Kellogg, General Mills, Soyjoy, CoroWise Brand, Truvia and Unilever⁵. While these were found in the majority as acceptable, others were found unacceptable such as Mars, Pepsi and Coca-Cola⁵. While these opinions were stated in 2013, some similar opinions are still held by nutrition professionals today. This way of thinking has the potential to deter nutrition students from entering the food and beverage industry even though there is an immense need.

Nutrition Professionals and Regulatory & Policy Involvement

Those with nutrition knowledge could have a career in the development of policies and regulations both at a local and global level^{11,12,13,14,15}. Since the 20th century, food companies have been voluntarily disclosing nutrition labeling¹³. By the end of the 20th century, both government and non-government organizations started to implement different front-of-package (FOP) nutrition labelling systems^{11,12,13}. The World Health Organization (WHO) first proposed FOP nutrition labelling as a policy measure to improve diet and health in 2004¹³.

Table 1

Paper	Year	Geography	Careers for students
Aspiring dietitians study: A pre-enrollment study of students motivations, awareness and expectations relating to careers in nutrition and dietetics. Hughes R, Desbrow B.	2005	Australia	Clinical; Private Practice; Sports Nutrition; RDNs; Nutritionist; Public Health; Research; Disease Prevention; Food Service Management; Food Industry
Moving Up! Mapping careers in nutrition. McConkey V.	2015	England	Public Health Bodies; Clinical Nutritionist; Dietitians; Academia; Food and Beverage Industry; Retailers; Food Service; Sports and Exercise Nutrition; Regulatory Affairs
Position of the Academy of Nutrition and Dietetics: Food Insecurity in the United States.	2017	United States	Research; Advocacy/ Public Policy; RDNs; NDTRs; Community Based (Food Banks); Public Health; Nutrition Education
Dietetics and Nutrition Students Response to Grocery Store Tour Training Program. Hilliard ED, Brunt A, Froelich C, Borr M.	2018	United States	Retail Dietetics; RDNs; Nutritionist;
A Consensus Model: Shifting assessment practices in dietetics tertiary education. Bacon R, Kellett J, Dart J, et al.	2018	Australia	Private Practice; Community Care; RDNs; E-Health Services; Food and Beverage Industry; Clinical
Academy of the Nutrition and Dietetics. Practice paper of the Academy of Nutrition and Dietetics: Comprehensive nutrition programs and services in schools.	2018	United States	RDNs; NDTRs; Advocacy; Public Health; Nutritionist; School Nutrition
Position of the Academy of Nutrition and Dietetics: Nutrition Informatics.	2019	United States	Nutrition Informatics; Health Care; RDNs; NDTRs; Sustainability

Five out of the 25 studies looked at the effectiveness of implementation of elements on the nutrition label^{11,12,13,14,15}. Four evaluated the efficacy of FOP labelling from a global lens^{11,12,13,14}. Of the studies that looked at the FOP labelling, there was a consensus that consumers can accurately judge the nutritional quality of food and beverages given certain FOP strategies^{11,12,13,14}. However, this is dependent on the consumer's level of education¹². The overall goal of having FOP labelling is (i) to communicate complex information to consumers in an easily understood, standardized format, to guide, inform and shape consumer food choices and behaviors; and (ii) to stimulate industry reformulation¹³.

The most recent regulation implemented in the United States was the updated nutrition facts panel with the addition of added sugars, among other changes^{15,16}. The food and beverage industry had a deadline of January 1, 2020 to be in compliance with this regulation¹⁵. One paper evaluated the influence of the new United States nutrition facts label had on the consumer and the consumer's interpretation of added sugars¹⁵. The study conducted by the Academy of Nutrition and Dietetics on the consumer perception and understanding of the new United States nutrition facts label and added sugars was

conducted as a randomized controlled experiment that compared the old nutrition label (pre-2020) and the new nutrition facts label (2020)¹⁵. The participants who saw the new nutrition facts label had significantly higher correct responses for understanding of added sugars content which demonstrated a greater ability to use the label to extract information on added sugars (76.9% vs 14.7%, $P < 0.01$)¹⁵. Participants in the new nutrition facts label group scored higher than those in the old nutrition facts label group in accurately identifying grams of total sugars (78.4% vs 70.4%, $P < 0.01$) and naturally occurring sugars (65.3% vs 15.1%, $P < 0.01$)¹⁵. Differences were seen between nutrition facts labels for individual products. For example, participants in the old nutrition facts label group were less likely to purchase juice ($P < 0.01$) and more likely to purchase bread ($P < 0.01$) compared with the participants in the new nutrition facts label group¹⁵. The participants were more likely to buy the juice when the new nutrition facts label displayed 0g added sugars for this product, compared with the control condition, where only total sugars were displayed (28g for juice)¹⁵. However, the new nutrition facts label for bread may have served as a deterrent for purchase due to the information on added sugars¹⁵. It was presented per serving and per package, and because added sugars content was considerable per package, the new nutrition facts label may be what decreased purchase intent¹⁵.

The implications of both FOP labelling and the nutrition facts label regulations and policies affect both the consumer and the nutrition community. These results show that it is important for those with a nutrition background to be involved in regulation and policy development as well as advocacy efforts. Those with nutrition backgrounds have the knowledge and expertise to help guide these conversations that will affect the food and beverage industry and ultimately impact the consumer.

Food and Beverage Industry Opportunities

There are opportunities to be involved in regulation development and advocacy efforts within the food and beverage industry. However, that is not the only opportunity in the industry setting. Fifteen out of the 25 papers highlight opportunities and headwinds for the food and beverage industry. In order to capitalize on the opportunities and address the headwinds these papers highlight where the industry could benefit by having nutrition experts on their staff.

One headwind that the food and beverage industry have been trying to navigate is how to not market to children¹⁷. This is not an issue that is localized to the United States but expands to Canada, United Kingdom and Australia¹⁷. Kent et al states that marketing to children tends to “promote food and beverages of low nutritional quality, influences their dietary preferences, purchasing behaviors and consumption patterns”¹⁷.

Several statements against the food and beverage industry is “food and beverage marketing has been identified as one factor driving the upward trend in global obesity rates”^{17,18}. These concerns have ignited corporate commitments to reformulate^{16,19,17,20}. This issue of added sugars was addressed in 2015 when the World Health Organization strongly recommended that free sugars should not provide more than 10% of energy intake¹⁰. This influenced the 2015-2020 Dietary Guidelines for Americans that would require all nutrition facts labels to declare added sugars along with a daily value^{15,16}. These Dietary Guidelines would then trigger a country wide effort of reformulation and update labels. Scott et al stated that “product reformulation has been praised as a rare example of a win-win for the food and beverage industry and public health efforts to reduce obesity and non-communicable diseases (NCDs)”¹⁶.

Three out of 25 papers concluded that claims on packaging whether they be nutrient content claims, structure function claims or health claims have the potential to increase purchase intent on packaged goods^{21,22,23}. In 2009, there was a total of 32,300 products with claims in the United States⁶. In 2016, this number increased to 79,779⁶. While claims can increase purchase intent, some conclude that it

could mislead consumers to purchase products that, while having a “low amount” of one nutrient of concern, it could still be another nutrient of concern^{21,22,23}. Taillie et al highlighted that the Food Label and Package survey was conducted in 2006-2007 and found that 53% of all packaged foods and beverages in the United States had nutrient content claims²³. Another 2010 study examined 56,900 products in 6 stores in North Dakota and found that 49% of products had some form of nutritional marketing²³. Nutrition content claims were the most common in representing 76% of the products within nutritional marketing²³.

The regulations put forth by the Food and Drug Administration in 21 Code of Federal Regulation (CFR) 101.18 state that claims should first be truthful and not misleading. Beyond what is stated in the CFR, the United States Chamber Institute for Legal Reform published a report in 2017 presenting trends in the food and beverage class action lawsuit arena. Even if a claim meets the regulatory requirements for ensuring claims are truthful and not misleading this report highlights that plaintiff lawyers are searching for ways to file a class action lawsuit²⁴. Court dockets were reviewed, and they revealed that 118 new class action lawsuits targeting the marketing of food and beverages filed in or removed to federal courts in 2015²⁴. The pace of filings continued to increase in 2016 to 171²⁴. Overall, there were over 425 active food marketing class action lawsuits in the federal courts during a two-year period²⁴. While this report was published 3 years ago, it can be assumed this number continues to rise.

The research analyzed in this literature show several headwinds that the food and beverage industry is addressing. Whether that is their marketing strategy, navigating the newest regulation or corporate commitment it is beneficial to have team members whose background is rooted in nutrition. Not only would nutrition experts be needed to address the headwinds, but they can also shed light to other developing areas of interest. For example, the Academy of Nutrition and Dietetics partnered with the Dietitians of Canada and the American College of Sports Medicine to publish nutrition recommendations for athletes²⁵. They state that sports foods (sports drinks, sports bars, sports confectionery sports gel, electrolyte supplements, protein supplements, liquid meal supplements) can be used as a practice choice to meet sports nutrition goals²⁵.

Nutrition expertise is not only needed in navigating sports nutrition needs to provide a credible product, but also navigating where food and beverage items can be sold. For brands that want to be offered in an elementary, middle or high school they need to meet certain regulations set forth by the United States Department of Agriculture (USDA) such as Smart Snack standards¹⁰. The Smart Snack standards are as follows: snack items and side dishes must have less than or equal to 200 calories and 200 mg sodium per item¹⁰. There must be less than 35% of calories from total fat, less than 10% calories from saturated fat and less than 35% of weight from total sugar as served¹⁰.

Another way nutrition expertise can come into play is addressing food insecurity and sustainability^{8,26}. The Academy of Nutrition and Dietetics called upon nutrition professionals stating that they have a central role to address food insecurity⁸. Lawrence et al states that while there may be an agricultural surplus there is the risk of not providing adequate nutrition and the availability of food provides no guarantees of its nutritional quality²⁶. Nutrition professionals must stay abreast the latest food technologies to stay relevant in addressing the concerns of food insecurity and sustainability²⁶. RDNs and NDTRs are uniquely positioned to address food loss and waste within the food system and can engage with food processors and food retailers⁸. Companies, not isolated to food and beverage industries, are addressing sustainability efforts head on and nutrition professionals have the opportunity to help lead the narrative.

Whether addressing public health concerns through limiting nutrients of concern, navigating what claims are most meaningful to the consumer, advocating for credible sport nutrition, guiding formulations

to meet Smart Snack standards or addressing issues like food insecurity and sustainability efforts, nutrition professionals are uniquely positioned to help guide the conversation from the genesis of a project. Successful companies are switching to an open innovation framework to enable the business to be more competitive¹⁹. Open innovation framework is an approach that opens up to the outside world in order to obtain resources and knowledge versus remaining held within corporate boundaries¹⁹. Miglietta et al suggest this paradigm can be defined as a set of internal and external flows of knowledge that, combined with each other, contribute to the definition of an original innovation process¹⁹. Companies are adopting this open innovation model which is based on the need to have other voices heard at the beginning of the research and development process. Nutrition professionals can be a part of that cross-functional team to bring value to the process.

Discussion

Given the growth in the nutrition and dietetics workforce, educators need to focus on the pre-enrollment phase of nutrition students^{2,3}. While the number of RDNs working outside of a clinical setting is growing, curriculum should evolve to match the increased employment potential. Currently, curriculum tends to be catered to advertise the main options for a nutrition student is to pursue a dietetic internship followed by accreditation of RDN and the RDN will then go and work in a clinical setting³. For most nutrition students, this is their primary option with no Plan B³.

With the rise in digitization, nutrition informatics can be a career option to pursue within the field of gene-diet interactions as big data solutions will be needed to parse the influence of dietary intake on the genes at an individual level⁷. Nutrition informatics can also be used in a public health setting to rapidly find the information needed to direct communities to safe food resources following natural disasters and help predict and track foodborne disease outbreaks by utilizing social media⁷. Nutrition informatics can also be used on development teams for nutrition based software or mobile apps or work as a clinical data analysts in a health care setting⁷. Nutrition informatics is recognized by the Academy of Nutrition and Dietetics as an area of practice for both RDNs and NDTRs⁷.

Grocery store nutrition experts are needed, private practice and sports nutrition are all also career paths to pursue. One example the Academy of Nutrition and Dietetics highlights is the opportunity to enter the school nutrition workforce¹⁰. The 2010 Healthy, Hunger Free Kids Act (HHFKA) mandated that the USDA develop hiring standards for all school nutrition personnel and local and state program directors¹⁰. The USDA's minimum educational requirements for hiring into the child nutrition program as administrators of school districts and state agency directors includes an undergraduate degree in nutrition and dietetics¹⁰. Some career paths may require further education for career advancement, due to the scientific, evidence-based nature of the discipline¹. While this may be the case, it is beneficial to highlight the many options to the nutrition student in the pre-enrollment phase³. There are opportunities to enter the workforce right after undergraduate degrees are earned to gain understanding in what field the student would like to pursue. Students may be able to find an employer who offers benefits such as tuition reimbursement if going back to school is an interest of the entry level nutrition graduate¹.

One career to enter after undergrad is an entry level position in the food and beverage industry. However, a career in the food and beverage industry has typically been met with scrutiny^{4,5}. There has even been comparison between the food and beverage industry and the tobacco industry^{4,16}. Many argue that the food and beverage industry is a major contributor to the burden of disease through supplying and marketing unhealthy foods and attempting to shape government policy and public opinion in their favor⁴. This could be a contributing factor in deterring nutrition students from this career path.

Given these concerns, the industry is beginning to shift to address public health concerns and new regulations^{15,16,17,18,20}. These corporate commitment shifts can be seen by decreasing the amounts of sugar through the development of an added sugars daily value or decreasing fats and salts^{15,16,20}. Making this transition is no easy endeavor and requires guidance from those who understand these public health concerns. Also being able to communicate standards for what a credible product would be based on the needs of special populations such as sports nutrition or school nutrition guidelines gives a nutrition expert an advantage^{10,25}. Therefore, it could be argued that given the industries move toward an open innovation model it is a great time to have nutrition professionals in the food and beverage industry¹⁹.

Nutrition experts not only can be involved in the development of concepts and formulations but also how this information is communicated on package and in point of sale materials. The body of evidence evaluated is mixed in what the consumer understands and/or wants to see on their packages^{21,22,23}. Nutrition experts can navigate the conversation why certain claims could be misleading. Whether that is how to accurately use FOP disclosures, nutrient content claims, health claims or dietary guidance claims the input from a nutrition professional is critical because they understand the public health implications^{21,22,23}. Given the amount of class action lawsuits, corporations would benefit from having input from the beginning of a project in order to navigate the claims space and to decrease the chance of getting sued²⁴.

The skills that nutrition graduates gain throughout their coursework equips them with a unique set of skills. Not many professionals are trained in the art of understanding and translating scientific concepts or recommendations in a consumer-friendly way. Nutrition graduates entering the workforce can leverage their unique set of skills to make them marketable to food and beverage industry. Whether contributing to the concept development with marketing and research and development or helping the business navigate the public health concerns (such as added sugar), these are conversations that those with nutrition backgrounds can be critical in participating and leading¹⁹. Nutritionists and dietitians that work in the food and beverage industry are uniquely positioned as credible sources of nutrition information¹. Both industry and the consumer can benefit from this positioning¹.

Conclusions

It is a time of immense opportunity for a nutrition undergraduate student to be graduating and entering the workforce. While the last year of completing the undergraduate program can be stressful to navigate, the student should not feel as if there is only one career path to follow. From going into a dietetic internship, post graduate degree or entering the workforce all are viable options. In the past, nutrition professionals working in the food and beverage industry were not highly respected. Current day, someone with a nutrition background may still face some scrutiny but companies are looking to meet corporate commitments across entire portfolios. Not only are they looking to reformulate but to also create new and innovative concepts that appeal to consumers while addressing the needs of public health. Not only could someone with a nutrition background help navigate this conversation, they can strive to lead the conversation and be an asset to the food and beverage industry on the front lines.

It is clear that undergraduate, or even graduate, students should be made aware of this need and this opportunity. If a curriculum was developed as part of core competency in nutrition or dietetics coursework, I believe this could change the trajectory of the food and beverage industry. This would better equip students to understand what opportunities are out there and how they could play a part in an ever-changing field.

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Nutrition & The Food & Beverage Industry

Ansley Fowler, RDN

Background

- University of Georgia, 2014
 - Dietetics & Nutrition Science
- Southern Regional Medical Center 2015
- Food & Beverage Industry, 2015-Present
- Georgia State University, 2018-2020



UNIVERSITY OF GEORGIA



Southern Regional Medical Center



Literature Review

- Are there opportunities for nutrition students outside of pursuing a dietetic internship or coordinated program progressing to a clinical based career?
- The objective was to evaluate current literature to see:
 - What opportunities are available for nutrition students
 - Investigate what researchers are saying about the cross-over of public policy and the food & beverage industry
 - Shed light to the necessity of having nutrition professionals in the food & beverage industry
- 25 papers evaluated

Literature Review

Opportunities are available for nutrition students

- Continued growth in the nutrition and dietetics workforce, with a predicted increase in positions from 6,600 in 2015 to 9,000 by 2020¹.
- Hughes et al evaluated the need of presenting careers paths in the pre-enrolment phase².
- 7/25 papers focused on the broad outlook of available career options^{1,2,3,4,5,6}
 - Registered dietitian nutritionist (RDN), clinical practice, public health, research or academia, food or beverage industry, sports nutrition, private practice, nutritionist, nutrition and dietetic technicians, registered (NDTRs), food service management, grocery or retail, regulatory or advocacy, school nutritionist, community or food banks, e-health or informatics, disease prevention, nutrition education and sustainability

Literature Review

Cross-over of public policy and the food & beverage industry

- Since the 20th century, food companies have been voluntarily disclosing nutrition labeling⁷.
- By the end of the 20th century, both government and non-government organizations started to implement different front-of-package (FOP) nutrition labelling systems^{8,9,10}.
- Consensus that consumers can accurately judge the nutritional quality of food and beverages given certain FOP strategies^{8,9,10,11}.
 - Dependent on the consumer's level of education⁹
- The overall goal of having FOP labelling is
 - (i) to communicate complex information to consumers in an easily understood, standardized format, to guide, inform and shape consumer food choices and behaviors
 - (ii) to stimulate industry reformulation¹⁰
- 5/25 studies looked at the effectiveness of implementation of elements on the nutrition label^{8,9,10,11,12}.

Literature Review

Nutrition professionals in the food & beverage industry

- 15/25 papers identified opportunities and headwinds in the food and beverage industry
- Marketing Strategies¹³
 - Marketing to children
 - Food and marketing has been identified as one factor driving the upward trend in global obesity rates^{13,14}
 - Claims
- Navigating regulations
 - 2015-2020 Dietary Guidelines influenced the regulations for the FDA to update labels for added sugars^{12,15}
- Corporate Commitments
 - Product reformulation has been praised as a rare example of a win-win for the food and beverage industry and public health efforts to reduce obesity and non-communicable diseases (NCDs)¹⁵

Outcome Documents

- A set of 3 lectures highlighting nutrition in the food and beverage industry
 - 1. Overview
 - 2. How to develop a nutrition label
 - 3. Nutrition & Policy
- Each lecture has an exercise that the students could work through

Nutrition in the Food & Beverage Industry-Overview

Lecture 1

Learning Outcomes:

1. Student will be able to identify post graduation opportunities with a nutrition science undergraduate degree.
2. Student will be able to identify nutrition related tasks in nutrition guidance, regulatory, research & development.
3. Student will be able to see how the food and beverage industry is using the open innovation framework to incorporate a cross-functional approach in developing products.

Exercise:

Creating a food or beverage concept based on key questions

Developing a Nutrition Facts Label

Lecture 2

Learning Outcomes:

1. Student will be able to differentiate between FDA and USDA regulatory responsibilities.
2. Student will be able to identify the mandatory labelling elements of a food or beverage label.
3. Student will be able to create a nutrition label.

Exercise:

Using the concept that students create in Lecture 1, they will build a food or beverage label.



Nutrition & Policy

Lecture 3

Learning Outcomes:

1. Student will be able to identify different types of front of pack labelling (fact based, warning systems, healthy icons) and how they differ globally.
2. Student will be able to identify opportunities for nutrition professionals in different industries as it relates to policy (Committees, FDA/USDA, Food & Beverage Companies).
3. Student will be able to see how the guidelines can effect policies (ex: Dietary Guidelines 2015-2020).

Exercise:

Write two considerations that should be taken into account when presenting to the president of a packaged meal company (whom has no nutrition knowledge) that his/her company should lower their overall sodium content.

Conclusion



What I learned



Challenges



Questions

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