

Pedagogical approaches utilized in nutrition education: A scoping review protocol

Krishna Thiagarajah ¹, Alyssa Denneler ², Amy Minix ³, Shannon M. Sipes ⁴

¹Department of Applied Health Science, School of Public Health-Bloomington, Indiana University, Bloomington, Indiana, USA

² IU Libraries, Indiana University, Bloomington, Indiana, USA

³ Sciences Library, Indiana University, Bloomington, Indiana, USA

⁴ Center for Innovative Teaching and Learning, Indiana University, Bloomington, Indiana, USA

ABSTRACT

In nutrition and dietetics programs, active learning strategies are recommended to maximize student learning, but many instructors still default to a lecture-based teaching approach. Trained as disciplinary experts, not pedagogical experts, an overview of pedagogical methods utilized in the discipline will allow instructors an introduction to this body of knowledge and provide Scholarship of Teaching and Learning (SoTL) scholars with a way to identify gaps for future work. Therefore, the authors will explore the current literature on pedagogical strategies utilized within nutrition and dietetics undergraduate programs in the USA and Canada, using the Joanna Briggs Institute guidance for systematic and scoping reviews. The purpose of this article is to present the protocol for the subsequent scoping review as the recommended way of registering educational focused protocols.

Key Words

Dietetics education, Nutrition education, Scholarship of teaching and learning, Scoping systematic review, Undergraduate coursework

BACKGROUND

The aim of dietetics and nutrition education is to prepare students to become skilled and competent practitioners (Molaison et al., 2009). Hence, institutions of higher education are facing increased scrutiny to improve student learning and demonstrate program effectiveness (Monaco and Martin, 2007). Despite research showing student centered active learning techniques improve student performance (Freeman et al., 2014;

González-Sancho et al., 2013; Michel et al., 2009; Newton et al., 2015; Santos et al., 2020), the predominant pedagogical method for presenting course material is via lecture, a teacher centered method where students are passive recipients (Lammers and Murphy, 2002; Prober and Heath, 2012). The disadvantages of lectures include failing to provide instructors with feedback about student learning and assuming that all students learn at the same pace. Further, students' attention wanes quickly during lectures and information tends to be forgotten easily when students are passively listening (Hartley and Cameron, 1967; MacManaway, 1970). Teacher driven instructional methods continue to have a place in the classroom, but it is recommended to combine lecture with other instructional methods (Perrin, 2014).

Faculty and instructors often lack formal training on how to implement and assess pedagogical approaches in the classroom. Campus teaching centers provide programming to address this gap through workshops, learning communities, teaching observations, individual consultations, and suggested readings (Beach et al., 2016). Systematic reviews are another often underutilized approach to helping novices better understand, evaluate, and potentially implement new teaching methods (Leung et al., 2017).

Systematic reviews are one type of evidence synthesis that can be used to conduct stand-alone reviews of existing literature. These reviews serve to describe the state of the field (i.e. narrative review, textual narrative synthesis, meta-summary, meta-narrative, and scoping review), test a hypothesis using the literature (i.e. meta-analysis, realist review, and ecological triangulation), extend the literature to create something new (i.e. meta-ethnography, thematic synthesis, meta-interpretation, meta-study, critical interpretive synthesis, and framework synthesis) or critique the current literature base (i.e. systematic review) (Grant and Booth, 2009; Xiao and Watson, 2019). Scoping reviews (i.e. describe) are often a precursor to a systematic review (i.e. critique).

Scoping reviews are recommended to document breadth and depth of coverage of a body of literature (Munn et al., 2018), being chosen over other types of reviews when the evidence is new enough to prevent posing precise research questions (Armstrong et al., 2011). The purpose of such a review is to identify gaps in knowledge on a specific topic and avoid repeating previous research efforts by fully understanding the current

state of the literature (Arksey and O'Malley, 2005; Lo, 2020; M. D. J. Peters et al., 2015). Like systematic reviews, scoping reviews are also useful as an introduction to a new field (Dowd and Johnson, 2020).

While scoping reviews are common in clinical health disciplines including nutrition sciences and dietetics (Baranowski et al., 2019; Juckett et al., 2020; Potter et al., 2018), they are less common in the scholarship of teaching and learning (SoTL) literature (Divan et al., 2017). A key characteristic of SoTL is the reliance on epistemologies and methodologies of the researcher's discipline. Therefore, applying a systematic or scoping review approach to study the pedagogical approaches to nutrition and dietetics appears to be a natural fit. To date, however, we have been unable to identify published systematic or scoping reviews focused on pedagogical approaches within nutrition science and dietetics programs.

In the Cochrane approach to clinical systematic reviews, the first step is registration of the proposed topic and approval of a protocol for the review. This is done to gain peer feedback and validation of the methodology before the review is conducted (Sieving, 2007). A similar step is required in the Joanna Briggs Institute (JBI) approach to scoping reviews. Scoping review protocols should be shared for transparency, reduced reporting bias, and validation, but unlike systematic reviews are ineligible for registration (Peters et al., 2020). The recommendation for completing this step in a scoping review is to publish the protocol so that it can undergo the peer review process. Therefore, the purpose of this article is to present the protocol for a scoping review to be conducted to explore the current literature on pedagogical strategies utilized within nutrition and dietetics undergraduate programs in the USA and Canada.

AIM AND OBJECTIVE

The aim of this review is to answer the question “What are the pedagogical approaches currently used in dietetics, nutrition, and food science undergraduate programs in the USA and Canada?” The main objective of this review is to provide a comprehensive overview of original research articles published between 2010-2020 that include in the abstract or keywords nutrition education, nutrition instruction or dietetics.

STUDY DESIGN

Despite differences in procedures across various types of literature reviews, all the reviews can be conducted following eight common steps: (1) formulating the research problem; (2) developing and validating the review protocol; (3) searching the literature; (4) screening for inclusion; (5) assessing quality; (6) extracting data; (7) analyzing and synthesizing data; and (8) reporting the findings (Figure 1) (Xiao and Watson, 2019, p. 102). The current study will utilize the Joanna Briggs Institute guidance for systematic and scoping reviews and will organize this protocol according to the steps presented above.

Formulating the Research Problem

Following preliminary research on instructional strategies used in nutrition-dietetics courses, it became apparent that evidence on the recommendation on instructional strategies for nutrition-dietetic courses was insufficient for understanding best practices, thus illustrating an evidence gap. Considering this deficiency, the review's research question, "What are the pedagogical approaches currently used in dietetics, nutrition, and food science undergraduate programs in the USA and Canada?" was developed.

Developing and Validating the Review Protocol

The review protocol is comparable to a research design in social science studies. It is a preset plan that specifies the methodology utilized in conducting the review. The review protocol is absolutely crucial for rigorous systematic reviews (Brereton et al., 2007; Okoli and Schabram, 2010). It is necessary for enhancing the quality of review because it reduces the possibility of researcher bias in data selection and analysis (Kitchenham and Charters, 2007). It also increases the reliability of the review because others can use the same protocol to repeat the study for cross-check and verification. The review protocol describes all the elements of the review, including the purpose of the study, research questions, inclusion criteria, search strategies, quality assessment criteria and screening procedures, strategies for data extraction, synthesis, and reporting (Gates, 2002; Gomersall et al., 2015). Including a project timetable in the review protocol is also useful for keeping the study on track. In medicine, review protocols are often submitted for peer review (Kitchenham and Charters, 2007).

Searching the Literature

The following online databases will be systematically searched: SCOPUS, MEDLINE, ERIC, CINAHL, Embase, and ProQuest Dissertations & Theses for research published between 2010 and 2020. The research team will use a combination of keywords that cover topics related to pedagogical methods, undergraduate education, and nutrition and dietetics (Table 1). Specific MeSH terms were identified, including 1. “nutritional science”, 2. “dietetics”, 3. “teaching”, 4. “education, medical undergraduate”, and 5. “models, educational.” Articles generated from the above criteria will be manually checked by reading through the abstract. Publication status, publication date and language will be subjected to limits. Hence, searches will be restricted to papers published in English between 2010 and 2020. Results of the online database searches will be imported to Zotero, a bibliographic software. Zotero is a free, easy-to-use tool to help to collect, organize, cite, and share research. Bibliographic citations of included studies will be searched to identify any additional relevant studies. Articles generated from the above criteria will be manually checked by reading through the abstract.

TABLE 1

Keywords and Subject Headings

Keywords		
<i>Concept 1: Pedagogical Methods</i>	<i>Concept 2: Undergraduate Education</i>	<i>Concept 3: Nutrition and dietetics</i>
teach* method*	University teach*	Coordinated program
Learn* environment*	Undergraduate students	didactic program
pedagog*	Undergraduate course*	Nutrition and dietetics
Learn* method*	undergraduate	nutr*

Instruction* method*	Postsecondary educat*	dietetics
teaching/learning strateg*	Post-secondary educat*	Nutritional science
curricul*	Post Secondary educat*	
Theory and practice of educat*	University student*	
blended learn*	Undergraduate educat*	
hybrid learn*	Undergraduate program	
Team based learn*	College student*	
Team-based learn*		
educat*		
learn*		
Medical Subject Headings (MeSH)		
Models, Educational (MeSH) (can be related to patient education but is not restricted to it)	Education, Medical, Undergraduate (MeSH)	Nutritional Sciences (MeSH)
Teaching (MeSH)		Dietetics (MeSH)
Education (MeSH)		

Search Strategy

Ovid MEDLINE (PubMed)

1. exp Dietetics/
2. (“nutrition* science*” or “Nutritional Science” or “coordinated program” or “didactic program” or dietetic*).tw
3. 1 or 2

4. exp Teaching/
5. exp Education/
6. (“teach* method*” or “learn* environment*” or pedgag* or “learn* method*” or “instruction* method*” or “teaching/learning strateg*” or curricul* or “theory and practice of educat*” or “blended learn*” or “hybrid learn*” or “team based learn*” or “team-based learn*” or educat* or learn*).tw
7. or/ 4-6
8. (“university teach*” or “undergraduate student*” or undergraduate* or “undergraduate course*” or “post secondary educat*” or “post-secondary educat*” or “postsecondary educat*” or “college student*” or “university student*” or “undergraduate course*” or “undergraduate program*” mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
9. 3 and 7 and 8

Search Study & Terms

The following online databases (SCOPUS, MEDLINE, ERIC, CINAHL, Embase, and ProQuest Dissertations & Theses) will be searched for research published between 2010 and 2020. Two librarians, which consists of one subject specialist and one functional librarian, will use a combination of keywords that cover topics related to pedagogical methods, undergraduate education, and nutrition and dietetics. Specific MeSH terms were identified, including “nutritional science”, “dietetics”, “teaching”, “education, medical undergraduate”, and “models, educational.” Articles generated from the above criteria will be manually checked by reading through the abstract.

Additionally, a manual review of the references included in selected studies will be conducted. Database results will be imported into Zotero, a bibliographic management software, and deduplicated. Once articles have been deduplicated, the resources will be exported to Covidence software to begin the title/abstract review. Covidence facilitates the screening process to ensure articles meet the inclusion criteria and will be removed based on exclusion criteria. Two researchers (a faculty member and a student) who are well-versed in the field of nutrition and dietetics will screen the articles, using a blinded process to eliminate bias.

Screening for Inclusion

Eligibility criteria include; (i) Studies focused on pedagogical methods within undergraduate education in dietetics and nutrition, (ii) full-text articles, (iii) research articles published in the USA and Canada, (iv) articles must include in the abstract or keywords either nutrition education, nutrition instruction or dietetics (see Table 1), (v) studies must be dated between 2010-2020.

Exclusion criteria include; (i) articles not published in English, (ii) articles published before 2010, (iii) studies conducted outside of the USA and Canada, (iv) Synthesis articles will not be numerically counted, but can be cited as a source of data.

Assessing Relevance

Based on the review's predetermined inclusion and exclusion criteria, titles and abstracts of papers will then be independently screened by two reviewers, to ensure no bias occurs. Ineligible papers will be eliminated. Titles and abstracts that appear to meet the review's eligibility criteria will be subjected to full-text reading. A third reviewer will assist in the selection process if the two primary reviewers cannot reach a consensus on eligibility of articles. A flow chart will be used to demonstrate the review's selection process and exclusion reasons, demonstrating replicability and transparency.

Extracting Data

Covidence will be used to retrieve data from included papers. Extracted data will include author, study type, publication date, study characteristics (location, educational setting (eg, courses, class level, department in

universities), learner characteristics (profession, number of participants, age), intervention details (educational method, educational content, length/duration, outcome measures, outcome results, financial support). The review will map the instructional approaches used between 2010 and 2020 in nutrition-dietetics courses in the USA and Canada. To assure that all relevant data are collected adequately, the returned data will be reviewed by the research team prior to implementation. Data extraction will be conducted independently by two reviewers before comparing through covidence software. Differences will be discussed (if necessary with a third reviewer) before producing a single form containing the required data.

Data Analysis & Reporting the Findings

Systematic scoping reviews provide an overview by answering broad questions (Daudt et al., 2013). Following data extraction, results will be presented: (1) numerically—synopsis of the amount and type of included studies and (ii) narratively—a synthesis of all included studies. Authors will also stratify the teaching strategies used in foundation/introductory courses and advanced courses. The authors will discuss implications of the findings on future practice (teaching) and research. To provide a holistic analysis, the structure of the intervention of interest (using covidence) will be captured by recording pedagogy, course content/level and learning outcomes. This will consist of data including, but not limited to instructional method, educational content, length/duration, outcome measures, outcome results and financial support. This approach will allow us to determine the educational experience of learners and the strategies used.

LIMITATIONS

This review does have certain limitations. The authors are professionally proficient in English, so any non-English materials will not be included. Additionally, certain full-text academic publications may not be accessible due to paywalls since all authors have the same institutional affiliation. Interlibrary loan will be used to acquire full texts, as available, but discovery of such items could be limited.

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