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# A Qualitative Phenomenological Exploration of Teachers' Experience With Nutrition Education

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**ABSTRACT**

**Background:** Nutrition education delivered by classroom teachers has become a popular intervention designed to combat childhood obesity. However, few qualitative studies have explored nutrition education with teachers **Purpose:** The purpose of this study was to explore how elementary teachers describe their experience with nutrition education. **Methods:** A qualitative phenomenological approach was used. Semistructured interviews, observations, and document analysis were conducted with 10 teachers who delivered nutrition education in their classrooms. Inductive coding was used to determine invariant constituents, reduce constituents to categories, and cluster categories into themes. Reliability and validity were accomplished through intercoder agreement, audio recording, triangulation, bracketing, and member checking. **Results:** Results identified 5 core themes related to roles teachers play in nutrition education, the importance placed upon nutrition, motivation for supplementary activities, barriers, and a triadic relationship between students, teachers, and curriculum. **Discussion:** Findings reveal interactions within the nutrition education experience in which teachers balance barriers with their value of nutrition education and motivation to help students make healthy choices. **Translation to Health Education Practice:** Health educators should work with classroom teachers at the program design, implementation, and evaluation stages of curriculum development to better address needs and facilitate the delivery of high-quality nutrition education for students.

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## Background

As the prevalence of childhood obesity has increased in the United States, so have nutrition education interventions. The general intent of programming is to improve knowledge and behavioral predictors that will lead to improved dietary and/or physical activity behavior. Such lifestyle modifications have been overwhelmingly linked to decreasing the risk of chronic diseases, such as cardiovascular diseases and diabetes.[1] Thus, it is important that efforts are made to implement effective programming during youth to establish health lifestyle habits early, reduce childhood obesity, and reduce the risk of chronic diseases. One method of delivering nutrition education programming gaining popularity is through the classroom teacher rather than an outside nutrition expert.

Teachers are important role models in students' lives as familiar adults who spend a significant amount of time with children and thus have the potential to positively influence expected outcomes of nutrition interventions. Both physical activity and nutrition research has demonstrated that when teachers model positive behaviors, such as participating in a physical activity program or consuming fruit, students are more likely to perform those behaviors.[2,3]

Multiple nutrition and/or physical activity interventions delivered by classroom teachers have shown promise. Research comparing a nutrition education intervention delivered by classroom teachers versus guest nutritionists demonstrated that teachers were more effective at improving students' healthy eating behaviors.[4] Specific outcomes from interventions have included increased fruit and vegetable intake, behavioral intentions for healthy eating, physical activity, nutrition knowledge, and efficacy expectations regarding healthy eating, as well as decreased sedentary activity and consumption of sweets.[5-8] However, not all studies have

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demonstrated improvements with teacher-delivered intervention. Some studies showed no improvement in fruit and vegetable consumption, attitude, body mass index (BMI), waist circumference, or subscapular skinfold thickness.[6,8,9] Although these variables may be affected by any number of non-classroom-related confounders, the teacher delivering the material may impact these variables, and qualitative research with teachers can elucidate in-depth perspectives on nutrition education that are vital to understanding their experience and informing future quantitative studies.

A variety of qualitative research studies concerning teachers and health have been conducted; however, this research is limited in scope and does not always focus solely on teachers. Some qualitative nutrition research with classroom teachers explored specific factors affecting teaching such as barriers, facilitators, or policy, leaving a gap in knowledge of the overall experience of nutrition education.[10,11] Other research explored nutrition-related perspectives of a variety of school staff, making classroom teachers' voices less prominent and in depth.[12-15] Several studies solely explored teachers' perspectives; however, these studies were conducted in Head Start or preschool classrooms, different from elementary school environments.[16,17] One study explored the role of elementary classroom teachers in nutrition and physical education within low-income schools but was strongly quantitative in presentation, lacking depth and warranting further exploration in this area.[18] Elementary school classrooms are an ideal environment for nutrition education delivery due to the time that students spend at school and the number of youth attending public school. Understanding teachers' perspectives on nutrition education is essential for program delivery and, ultimately, student outcomes. To date, there are no studies that use a phenomenological qualitative design to explore teachers' perspectives and experiences in depth without the inclusion of other school staff perspectives.

## Purpose

The purpose of this phenomenological study was to explore how teachers describe their experience with nutrition education within the context of a phenomenology. Nutrition education will be generally defined as any curriculum, lesson, discussion, learning opportunity, or educational activity or component related to nutrition with which teachers identify, acknowledge, utilize, or have any other interaction that would result in the formation of an opinion.

## Methods

### Overview and design

A qualitative transcendental phenomenological approach was used in this study. A phenomenology is an approach to qualitative research that describes the meaning of a lived experience of a phenomenon for several individuals, which in this case is the experience of nutrition education. The purpose is to describe the commonalities of the experience.[19-23] There are 2 main types of phenomenologies—hermeneutical and transcendental—the latter of which is applied in this study. The transcendental phenomenology approach by Moustakas, adapted from Husserl, focuses on the participants' given descriptions to generate an essence of the lived experience, as opposed to hermeneutical phenomenology which more strongly relies on the researcher's interpretations of what the lived experience means.[19-21] A postpositivism paradigm formed the foundation of this study, which is a belief system that utilizes a more scientific approach to research.[22,23] This approach views the methodology as a series of logical steps, accounts for multiple perspectives from participants, and utilizes rigorous data collection and analysis methodology.[22,23] In this study, multiple data collection methods, a lengthy and rigorous analytic process, and multiple validity and reliability approaches were used based on this belief system.

### Sampling and participants

This exploration was approved by the Internal Review Board of the University of Nebraska – Lincoln and the review board of the participating school district. Purposive criterion sampling was used to identify teachers who have experienced the phenomenon of delivering classroom-based nutrition education. This method of sampling helps to create a homogenous sample of participants that have all experienced the phenomenon.[23] Teachers were selected from one district based on their use of Growing Healthy Kids, one specific interactive curriculum, which helped to maintain homogeneity of the sample.[24,25] Teachers were selected from kindergarten, first, or second grade to focus the experience within the boundaries of young elementary students. Finally, they were required to have at least one year of experience with the curricula. Participants were contacted via e-mail with a cover letter and consent form explaining their rights as participants. Written consent was obtained and each participant was assigned a pseudonym.

A sample of 10 teachers participated in this study. Although there is no standard for a minimum number of participants in qualitative research because its purpose is not to generalize, previous experts have identified a sample

size of 10 as adequate, generally when extensive detail has been collected to saturation.[23] In this study, teachers were no longer recruited once saturation had been reached, in which no new information was provided to aid in the understanding of the phenomenon.[26-28] Participants predominantly taught kindergarten (50%) or first grade (40%). There were similar numbers of teachers from low-income (60%) and high-income schools (40%). All teachers from low-income schools had the Fresh Fruit and Vegetable Program in their classrooms.[29] Teachers' experience with the curriculum ranged from 2 to 12 years.

### Growing Healthy Kids curriculum

Although evaluation and analysis of curriculum are not within the scope of this article, the type of curriculum likely shaped the unique nutrition education experiences of the teachers. Briefly, Growing Healthy Kids, created by Extension Educators, is a 10-hour interactive nutrition and physical activity kit delivered each year during a 2- to 3-week period beginning in kindergarten.[25] Each grade received an age-appropriate kit designed for that grade level, containing 5 units with 2 to 5 nutrition lessons and one physical activity break in each unit. Lessons were designed to teach nutrition and physical activity in a fun and interactive format with games, hands-on and group activities, and experiments. Teachers were trained at the beginning of the program to familiarize themselves with the curriculum.

### Data collection

The first author, who completed data collection, was trained in qualitative methodology and bracketed biases before beginning data collection to assure data accuracy. A semistructured interview protocol was developed, reviewed by 4 qualitative experts, and edited based on feedback (Table 1). Semistructured interviews were conducted with teachers privately in their regular classroom. All interviews were audiotaped for accuracy. The interview protocol included 10 questions concerning the following topics: role in nutrition education, feelings about teaching nutrition, view toward nutrition in comparison to core subjects, influence on students, experiences with curriculum, and barriers. Throughout the process of the interviews, probes and follow-up questions were added as needed to encourage elaboration and clarify responses. Specific questions were added as the interview process progressed in response to developing themes. All interviews were conducted by the first author immediately after each interview and verbatim transcripts were generated.

Table 1. Interview protocol.[a]

| Questions |
|---|
| To explore broad experience with nutrition and nutrition education: |
| How would you describe your current role in nutrition education? |
| How does this compare to the role you think you should play? |
| Tell me how you feel about teaching students about nutrition as part of the school curriculum? |
| Probes: Comfort, confidence, enjoyment, appropriateness |
| How do you view the subject of nutrition compared to other subjects you teach (such as math, English, etc.)? |
| How influential do you believe YOU, specifically, are in changing students' nutrition knowledge? |
| Confidence? |
| Behavior? |
| Probe: In what ways? |
| Tell me about anything you may do nutrition- or physical activity–related in your classroom outside of GHK?[b] |
| What motivates you to provide this extra education?[b] |
| To explore and generate more detail about specific experiences: |
| Tell me about your experiences teaching the GHK curriculum. |
| What is different about GHK compared to other nutrition curriculum or materials you may have used? |
| Tell me about what went well with the GHK curriculum. |
| Tell me about what barriers you faced in completing the GHK curriculum. |
| Tell me about the influences you think GHK has had on students' nutrition knowledge. |
| Behavior? |
| Confidence? |
| Probes: |
| Tell me more about that . . . |
| Can you give me an example? |
| I want to understand what you mean, can you tell me again? |
| Why do you think that is? |

[a] GHK indicates Growing Healthy Kids.
[b] This question was added during the interview process in response to developing themes; all teachers addressed this topic.

Observations were conducted with teachers during their regular nutrition education time to gather direct observational data and better illustrate the overall experience of nutrition education. Teachers were observed on their use of the nutrition education materials, incorporation of their own teaching strategies, attitude and demeanor while teaching, strategies to promote nutrition-related knowledge, behavior, self-efficacy, and arrangement of classroom. Traditional detailed field notes were recorded and transferred to an observational matrix following the observation.

Teachers were asked to complete a reflection on each of the 5 lessons to understand their feelings on each lesson and the perceived influence on student learning. The following prompt was given, "Please write a reflection about how you felt about this specific set of lessons after you completed it."

Data collection was completed over a period of 6 months and ended upon saturation of the data, when no further themes or new information emerged to add to the understanding of the phenomenon.[26-28]

### Data analysis

Moustakas's structured method of inductive data analysis was used in this study. After each individual transcript

was read twice to immerse the researcher in the data, all transcripts were read again and memos were recorded to further immerse the researcher and highlight key concepts.[19] After initial immersion, the following steps were followed:

1. Horizontalization was performed by giving equal value and importance to each statement and coding it with a descriptive label.
2. Reduction and elimination of statements that were not a horizon of the experience was performed to determine the invariant constituents of the experience. This process involved asking whether the statement contained a moment that was necessary for understanding the experience and whether it could be abstracted and labeled.
3. Clustering was performed to group related constituents together, and each category was given a thematic label. Initial coding resulted in 164 categories of invariant constituents of the experience. This step was repeated several times to further group and reduce categories until all constituents were clustered and reduced into 5 core themes of the experience.
4. Final identification of these themes were performed by rereading the complete transcripts to verify that the theme and accompanying invariant constituents were explicitly expressed and compatible with the participants' words. These themes were used to construct individual and overall textural, structural, and textural–structural descriptions, culminating into an overall essence of the experience. Themes are presented within this text.

### *Reliability and validity*

Commonly identified reliability techniques utilized in this study include the recording of detailed field notes, an audio recorder for accuracy, and intercoder agreement from the senior author and an outside coder, with the latter technique being the most critical process of reliability.[23,30] The 2 additional coders analyzed data independently and then met with the first author to discuss codes. There were no significant discrepancies, and any small differences were discussed and resolved to create one set of themes.

Commonly identified validation techniques used in this study include data source triangulation to corroborate evidence, bracketing to clarify bias, and member checking.[23,31-33] Member checking, identified as the most critical validation technique, was conducted with participants to determine the credibility of the findings and interpretations.[31] Final themes, as well as a sample of the invariant constituents of those themes, were e-mailed to all teacher participants for review. Teachers were asked to examine these themes and reflect on the accuracy. Teachers who responded reported that the provided account accurately reflected their perspectives and experiences.

## Results

Five themes emerged from the teachers' experience of nutrition education in this study, including (1) meaningful roles, (2) importance, (3) perceived influences, (4) supplementary education and motivation, and (5) barriers (Table 2). Quotes presented throughout the results section use pseudonyms to protect the identity of participants.

### *Meaningful roles*

Teachers experienced nutrition education through a variety of roles. The most commonly reported roles were educator, role model, and coach. Other roles included advocate, supporter, engager, guide, school "wellness champ," and enlightener. Most roles were within the classroom; however, a couple of teachers expanded their roles school-wide through coordinating school wellness challenges, assisting with a variety of after-school wellness activities, and recruiting other teachers into wellness efforts.

Teachers expressed that their roles were meaningful for students' lives, particularly with serving as models for students:

> They [students] really look to their teacher to model after kind of what they are doing. Um, so it really sets the stage of, if I talk about what healthy choices I'm making, how these things impact me, they're gonna be more apt to try and want to do those themselves. Because they really want to put themselves to be like their teacher or that role. (Paula)

Most teachers believed that these roles were aligned with the roles they believed they should be playing in nutrition education and that these roles were *necessities* for their students. However, a few teachers expressed that they would like to do more if they had the resources and time, including increasing nutrition discussion in the classroom, exposing students to new foods, spending more time with the Fresh Fruit and Vegetable Program, and educating themselves more. Heather stated, "I think I could talk more about it and even educate myself more on some of the correct terms and how to talk to them [students]."

Other teachers felt that more efforts needed to be made with nutrition education in a broader sense rather than just their individual role:

> Outside of the world we hear the big push of health and obesity and all these things and how they're important. I don't think we're [society is] doing enough to educate the kids about what that means. We are doing more on the adult piece, not the kid piece. (Paula)

Table 2. Results: themes, key concepts from teachers' perspectives, and supporting quotes.

| Theme | Key Concepts and Supporting Quotes |
|---|---|
| Meaningful roles | **Key concepts**<br>Nutrition was experienced through a variety of roles inside and outside the classroom<br>Roles were meaningful for students' lives; roles were necessities<br>There could be more efforts toward nutrition education<br><br>**Supporting quotes**<br>Common roles quoted from most to all participants: "Role model," "coach," "educator," "advocate," and "supporter"<br>"They really look to their teacher to model after kind of what they are doing. Um, so it really sets the stage of, if I talk about what healthy choices I'm making, how these things impact me, they're gonna be more apt to try and want to do those themselves. Because they really want to put themselves to be like their teacher or that role." (Paula)<br>"I'm our wellness champ. So I'm in charge of running our quarterly challenges that are trying to promote healthier lifestyles. . . . And I arranged so that every day during NeSa testing the upper grades would have a snack." (Jane)<br>"I think I could talk more about it and even educate myself more on some of the correct terms and how to talk to them." (Heather) |
| Importance | **Key concepts**<br>Nutrition education was important compared to other school subjects<br>Nutrition education was essential at a young age to form the foundation of healthy lifestyle habits<br>There was a responsibility to help shape students' nutrition choices<br>It was a necessity to teach in the classroom environment<br><br>**Supporting quotes**<br>"It's [nutrition is] probably one of the most important and most relevant pieces of our health curriculum that we do." (Paula)<br>"I'll be honest with you . . . I think it's just as important or more important because like I said earlier, if you don't have healthy nutrition, then your body isn't ready to be able to be here. . . . If you have better nutrition, then in turn, hopefully you'll do better at school." (Carrie)<br>"I think it's just as important [as other subjects]. I mean, we wouldn't spend the whole year doing lessons like we're doing right now, but I think it carries over." (Karen)<br>"I almost am positive they [students] don't go home and talk about nutrition at home and so, they need to learn about it somewhere." (Sue) |
| Perceived influences | **Key concepts**<br>Teachers influenced students' behavior, knowledge, and self-efficacy through the additional activities they offered and roles they played. Teachers influenced the curriculum through adaptation for their individual classrooms<br>The curriculum influenced students' behavior, knowledge, and self-efficacy through interactive qualities. It influenced teachers' self-efficacy through simplicity and ease of use<br>Students influenced teachers' enjoyment of nutrition education through their positive attitude toward nutrition education<br><br>**Supporting quotes**<br>"They see what I do, and children at this age are influenced greatly by adults that they are with a lot. So, I think what I say they take to heart." (Nora)<br>"Well, um, at the beginning of the year, nobody was ever taking salad. But it had . . . they had spinach in it. So I bought a bag of spinach, and I brought it, and I just had them try just one plain leaf of spinach. Now they take it." (Karen)<br>"It [the curriculum] engages them more. . . . I think it helps them understand it more because they can see it instead of just like read about it." (Sue)<br>"The resources and materials are there and it's done in a way that allows me to feel confident about something that I don't know a whole lot about teaching." (Paula)<br>"I think teaching something that they want to know a lot about and they're excited about learning always helps me be more excited about the subject too." (Becky) |
| Supplementary education and motivation | **Key concepts**<br>Supplementary nutrition and physical activity–related lessons or activities were integrated in all classrooms<br>Motivation came from environmental, classroom-based, and internal motivators<br><br>**Supporting quotes**<br>On motivation:<br>"I just think childhood obesity is so sad." (Jane)<br>"I just think kids need to move. I think there's too much fast food and video games and sedentary lifestyles. And portions I think are just enormous. I just think that if you can kind of teach 'em young and get 'em moving." (Karen)<br>"They're little. They shouldn't be staying in one spot." (Paula)<br>" . . . they're only five and six years old. So their attention spans aren't very long even though we're supposed to still chug on getting the curriculum done. So I think that, you know, five minutes of movement break is huge. Huge. For all kids." (Carrie) |
| Barriers | **Key concepts**<br>Barriers to nutrition education included time, prioritization of core subjects, resources and budget, and home environment<br><br>**Supporting quotes**<br>"Our curriculum is only updated as budget permits." (Becky)<br>"We can't teach all the lessons." (Melissa)<br>"I think time is the biggest factor. If we are needing to finish up morning reading . . . maybe you'll get 20 rather than 30 minutes [of nutrition education] at the end of the day." (Theresa)<br>"But definitely math, and reading, and the writing skills have to take priority with that. But you can certainly do the math and the reading and the writing with nutrition, you know, teaching nutrition. I mean, it definitely ties in with that." (Theresa)<br>"So I feel like I can encourage them here, but ultimately I feel like it's the parents' choice to buy what they buy at the store." (Sue) |

### Importance

All teachers believed that nutrition education was important for their students. When comparing nutrition to other school subjects, Carrie stated, "I'll be honest with you … I think it's just as important or more important." She believed that it carried over to the rest of the students' school day by helping them to concentrate, learn, and achieve success in other academic subjects.

Many teachers expressed importance in terms of the future. Nutrition education was viewed as essential at a young age to form the foundation of healthy lifestyle choices later in life. Teachers felt a responsibility to educate children and help shape their nutrition and movement choices.

> It's something that's really important for their well-being and, you know, it's something that's a life skill so, you know, if you start practicing good nutrition and eating healthy at an early age, those habits can carry through for the rest of your life. (Nora)

All teachers believed that it was an important topic to teach in the classroom setting, and many expressed that it was a necessity. Teachers felt that home environments varied, so not all students would learn about nutrition at home. Others believed that even if students were learning about nutrition at home, school was still important in providing a formal learning environment. Heather believed that it was an area in which parents and teachers could deliver reinforcing messages for children: "It's some way we can work together."

Although teachers expressed that nutrition education was important, the amount of time spent on formal nutrition education was reported to be minimal. Teachers did express that they would like to dedicate more time to teaching nutrition; however, they did not believe that it necessitated the same amount of time as other subjects. Becky expressed, "I mean honestly, I can't see myself spending 60 minutes a day on nutrition."

### Perceived influences

Teachers experienced nutrition education through a triadic interaction of positive influences between themselves, their students, and the provided curriculum that was significant in forming their perceptions of nutrition education (Figure 1).

Many teachers developed enjoyment for nutrition education in part due to their students' excitement and positive attitude toward the topic. Sue expressed, "I think because they're super excited, I'm super excited … it kind of is like a domino effect." Teachers demonstrated this positive attitude toward nutrition education when delivering nutrition lessons through their body language, expressions, animation, and voice.

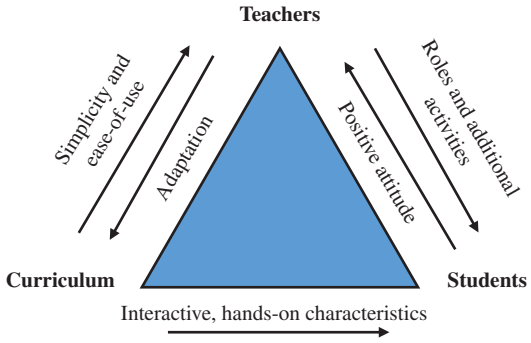


Figure 1. Depiction of teachers' perceptions of the interaction between themselves, the curriculum, and students that result in an improved nutrition education experience. Each arrow indicates the direction of a perceived positive influence and includes a descriptor of the action or characteristic that is causing the influence from each originating source. For instance, students positively influence teachers with their positive attitude. A more detailed description of this interaction can be found in the Discussion section.

In turn, teachers perceived themselves as very influential figures for this young age group. Melissa expressed, "They believe everything their teacher says and they look up to their teacher as this role model. … I think that is pretty influential for them." Most believed that the various roles they played positively impacted their students. Only one teacher believed that she was not significantly influential for students: "I know at this age, a lot of kiddos do look up to me, but at the same time, it's not as in like a big life picture … I think it's something that kind of fades away after time" (Heather).

Teachers all followed the same interactive, expert-created curriculum kit, specific for their grade level, which they believed had unique qualities that engaged and improved student learning compared to other curriculum. They perceived that the following strategies improved learning for their students—hands-on activities, interactive models, visuals and videos, variety of materials, experiments, reinforcing activities, independent and group learning opportunities and provided communications for parents. Sue explained, "It engages them more. … I think it helps them understand it more because they can see it instead of just like read about it." The curriculum directly influenced the teachers, with several reporting that its simplicity and ease of use increased their confidence and delivery of the material for students. Most felt very comfortable delivering the material, demonstrated while teaching. Paula explained, "The resources and materials are there and it's done in a way that allows me to feel confident about something that I don't know a whole lot about teaching."

Although teachers followed the same expert-created curriculum kit for their grade level, they influenced the

lessons by adding in a variety of strategies or adapting the curriculum to enhance their influence on students. The decision to adapt the curriculum was partly of their own choosing and partly due to students' positive response to the curriculum. For example, when students expressed enjoyment of a particular group lessons, teachers would adapt that lesson for independent learning opportunities, demonstrating the students' indirect effect on the curriculum. Observed or expressed strategies included personalizing the lessons to make material meaningful, repurposing group lessons for independent discovery learning, facilitating group learning to promote peer influence, providing opportunities for mastery experiences, role modeling, using verbal persuasion, incorporating additional learning strategies into the provided lesson, modifying lessons as needed to adapt to students' needs, and showing connections between materials.

Teachers believed that this combination of specific curriculum and adaptations positively influenced students to improve nutrition and/or physical activity–related knowledge, confidence, and behavior. The most commonly perceived improvements in behavior included more frequent handwashing, consumption of a variety of foods, consumption of nutritious meals and snacks, and willingness to try fruits and vegetables. Integral to perceived influence was the value that teachers placed upon this influence. Teachers strongly believed that even small behavior changes were very important in young children. Carrie described one particular student who had simply become more willing to try fruits and vegetables throughout the year, reflecting, "So even that small of a change of a behavior I think is huge, especially at this age. Because if we're seeing that small of a change now, what could it be in like two years or something?"

### Motivation for supplementary education

All teachers reported integrating some type of supplementary education or activity in relation to nutrition and/or physical activity. Some of these opportunities included integrating nutrition education into core subjects, teaching and encouraging with the Fresh Fruit and Vegetable Program, providing classroom tastings of new foods, incorporating movement into the school day (Brain Breaks, Inside Recess, Just Dance, Zumba, GoNoodle, YouTube, Deskercises, and Brain Pop), communicating with parents about nutrition, and encouraging children to participate in wellness challenges.

Teachers reported making these additional efforts based on a variety of motivators. They generally expressed a feeling of responsibility to help children build a foundation of healthy lifestyles at a young age. There was a sense that kids just *need* movement: Melissa stated, "I guess the movement piece comes from just, they're five years old and they are required to sit so much throughout the day. So I want them to be, you know, be a five year old and have that chance to move."

Environmental motivators included the food/physical activity environment and childhood obesity. Classroom-based motivators included maintaining focus and attention, increasing the overall sense of feeling better, reducing behavior issues, aiding in learning, and forming connections. Internal motivators included a sense of responsibility and care for students. The school environment helped maintain motivation, generally providing support for wellness efforts and making the experience positive for teachers.

### Barriers

Teachers experienced nutrition education through various barriers, the strongest of which was time. Teachers experienced time as a structure that restricted their ability to complete the provided nutrition curriculum. Carrie expressed, "I just wish we had more time to do it." The topic was rushed due tight schedules and core subject requirements. Some teachers experienced time as a barrier in terms of the amount of time they had the curriculum in their possession. Teachers received their interactive curriculum for 3 weeks, and with snow days, holidays, and other event conflicts that arose, teachers felt as if time slipped away during those 3 weeks. They believed that they could "juggle" the lessons with other subjects if they had the curriculum for a longer amount of time. Other teachers experienced time as a barrier in terms of the amount of time that the district allowed for nutrition education. Some teachers believed that 3 weeks with the kit was enough time, because they expressed that their district technically only provides 2 weeks to teach nutrition. Regardless, teachers attempted to tackle the issue of time by fitting in as many lessons as possible. Becky said, "We kind of fudge out some time of that third week to pull in more days," demonstrating her value of the topic.

Along with time, prioritization of core subjects limited nutrition education. All teachers voiced that core subjects, such as math and literacy, were "top priority" compared to nutrition because these subjects involve standardized state testing and relate to later life employment. Paula shared, "We've said it's [nutrition is] important, we need to be teaching these things, but when push comes to shove, they're gonna have you do the math over the nutrition."

Resources and budget were barriers that influenced the nutrition education experience. Some teachers expressed a dependency on the curriculum they were provided. Teachers reported that without the kit, if they wanted any activities for their students, they would have to take their already limited time to find these activities on their own. Additionally, teachers would have to pay out-of-pocket for any supplementary materials. The curriculum provided a convenience that teachers did not have previously.

The home environment was another barrier. Although teachers expressed that they influenced students, they also felt that they had no control over the home environment and that poor habits at home could undo the efforts that they expended for their students. Sue expressed, "I feel like I can encourage them here, but ultimately I feel like it's the parents' choice to buy what they buy at the store." However, this structure instilled a responsibility to make additional efforts to compensate for homes that may not have the resources or may have barriers to healthy choices. Teachers expressed that they wished parents would be more involved in student wellness, but did not know how to get them more involved. Some teachers were hesitant about how to communicate with parents concerning wellness and had a difficult time gauging the fine line between encouraging a healthy lifestyle and overstepping their role. Karen expressed, "I'm a little uncomfortable. … I don't know if I'm crossing the line, talking to the mom or not." Teachers did try making efforts to reduce this barrier by creating their own newsletters or utilizing newsletters provided with the curriculum to send home to parents.

### *Overall essence*

Overall, for teachers, nutrition education was experienced as an opportunity to play a variety of roles and make efforts beyond curriculum requirements to positively influence students' health, motivated by the responsibility and care they felt for their students. Teachers perceived their experience through a triadic relationship between themselves, their students, and the curriculum. They believed that this relationship had positive outcomes for both themselves and their students. However, it was not an experience without conflict, both internally and externally. Teachers expressed feelings of value and importance toward nutrition education, while conversely expressing prioritization toward core subjects and clarifying that nutrition did not necessitate an equivalent amount of education. Time, resources, and uncontrollable home environments restricted efforts, and teachers struggled to overcome these barriers. Despite a competing internal dialogue and external barriers, teachers voluntarily expended efforts throughout the school year to maximize an enjoyable nutrition and movement experience for their students and themselves.

## Discussion

This study explored nutrition education in the context of a phenomenology, providing an in-depth, holistic understanding of the experience and perspectives of classroom teachers. Exploration with teachers revealed complex feelings toward nutrition education that were not always consistent. However, teachers expressed and demonstrated enjoyment and commitment to nutrition education. Five specific themes emerged from this research: (1) meaningful roles, (2) importance, (3) perceived influences, (4) supplementary education and motivation, and (5) barriers. Other qualitative research has not yet demonstrated such complex perspectives on classroom teachers' experience.

One theme that emerged from this research was teachers' roles in nutrition education. Teachers perceived that they played many roles in nutrition education, which is supported by previous research that teachers perceive themselves as educators, role models, advocates, and motivators.[18] Our study reveals additional essential roles inside and outside the classroom, including recruiting other school staff into wellness efforts. With teachers making numerous efforts, these roles may have significant implications for students. Because this area of research has not been well studied, further research should be conducted to quantitatively examine the impact of these various roles for students.

The large number of roles that teachers played in this study was in part related to the theme of importance that they placed upon nutrition education. Teachers struggled with balancing feelings of importance toward nutrition, their prioritization of core subjects, and the question of whether nutrition needed an equal amount of dedication. The conflicted feelings demonstrated in this study have rarely been demonstrated in the current literature, which illustrates a promising area in which health educators can work to reduce confliction and strengthen already existing preferences toward nutrition education. Efforts aimed at increasing teachers' nutrition knowledge and providing solutions to core subject conflicts could help to shift the balance toward increased dedication to nutrition education.

The perceived triadic relationship of influences between teachers, curriculum, and students emerged as another significant theme (Figure 1). Teachers perceived that their roles in combination with the interactive nutrition curriculum positively influenced students. Positive student outcomes have been demonstrated in

several quantitative studies utilizing interactive curriculum.[34-36] Less present in the literature is the *perception* that teachers hold about student outcomes. Outcomes were not objectively measured in this study but have been measured elsewhere.[24,37] Perception alone is important as a potential key factor in nutrition education commitment and delivery. It has been widely noted by theorists that perception affects behavior. Several models of behavior change, such as the health belief model, theory of planned behavior, and social cognitive theory, all include some form of perceptional beliefs that influence behavior.[38,39] These theories would support the idea that teachers' positive perceptions have the potential to improve nutrition education delivery; therefore, efforts should be made to cultivate these perceptions.

Next, teachers were influenced by both students and the curriculum used. Students' own sense of enjoyment increased the teachers' sense of enjoyment, emphasizing the need to create materials for classrooms that engage and excite students. Confidence, on the other hand, improved due to the curriculum provided. Teachers generally receive training on new nutrition education materials with the goal of increasing program fidelity and confidence, as was the case with the curriculum provided in this study.[5,40] Surprisingly, though, teachers did not express confidence in relation to being trained. Rather, teachers felt that the fact that the curriculum was organized, simple, and easy to use improved their confidence. Teachers are generally under a tight, time-constraining schedule, so designing materials to be more simplistic and user-friendly with familiar educational terms may help to improve confidence without requiring time commitment to a training session.[41]

Last in this relationship was teachers' influence on the curriculum. Teachers made efforts to adapt the provided curriculum to their classroom, personalizing it for their students and adding additional learning strategies. Previous findings have supported that adaptation normally occurs and can aid implementation success.[42,43] Allowing adaptation can increase teacher willingness to deliver nutrition education by providing them with the flexibility necessary for the classroom environment.[10] Outcomes such as improved attitudes toward fruits and vegetables have been demonstrated with this freedom.[44] Although fidelity of implementation is important for evaluation and predicted outcomes, adaptation has the potential to improve the educational experience by making material more meaningful for students, targeting students not performing at grade level, and incorporating strategies for different learning styles. One possible limitation of adaptation is that teachers will include unreliable and inaccurate nutrition information, so future studies should examine the balance of fidelity and adaptation with student outcomes.

Motivation for supplementary education was another significant theme that emerged. Teachers included a variety of additional activities, most often with movement breaks, which have demonstrated a variety of benefits for students without detracting from academics.[45-47] Grade school staff have noted that lack of physical activity makes it difficult for students to focus, however some believe that providing these breaks will make it difficult to get students back on task, unlike the teachers in this study.[48,49]

Motivation for including voluntary activities is a fairly new finding. Although Head Start teachers have also expressed being motivated by the idea that children inherently need movement, little has been studied on elementary teacher motivation.[50] A key aspect to recruiting teachers to nutrition education efforts and improving their delivery of materials is motivation. This concept is cited by a number of behavior change theories such as the information–motivation–behavioral skills model and theory of planned behavior.[51] Health educators should therefore increase efforts to motivate teachers to incorporate more nutrition and physical activity education in their classrooms. Health educators could work one on one with teachers to identify internal motivators or address larger groups of teachers in motivational workshops with the subject matter.

Teachers participating in this study identified barriers that are consistent with previous research. Time, resources, and core subjects have consistently been identified as a barrier to delivering nutrition education.[10,11,17,48,52-55] Teachers in this study were most concerned with not having the resources for hands-on activities, because they felt that students learned best with this method. Although a variety of free resources exist for schools, particularly low-income schools, most of these are not hands-on activities, and further efforts may need to be allocated toward creating such resources.

Previous literature has addressed teachers' perceptions that parents may be a barrier that contributes to a child's unhealthy choices.[15,55] Some teachers believed that parents already know about nutrition and that it is not their place to intervene.[56] Even a wider range of school staff believed that programs should involve a parental and school connection to avoid conflicting with the home environment.[57] Similarly, this study found that some teachers were worried that they may be overstepping by communicating with parents; however, such feelings are not widely studied. Communication is vital to a successful program, so health educators should work to address teachers' concerns and facilitate relationships between parents and teachers to make teachers feel more

comfortable about talking openly about students' nutrition.

There were few limitations to this study. Although data were collected around the time that each teacher normally taught their main nutrition unit, some recollections addressed were experiences from earlier in the school year or from the previous school year and may not have been accurate. Voluntary participation excluded perceptions of teachers who did not wish to participate and may have had different views to share. The lack of focus groups as a data source may have limited the depth of information; however, 3 data sources were used to triangulate the data.

## Translation to Health Education Practice

Our findings demonstrate that teachers possess a complex set of experiences and perspectives that are integral in the nutrition education process. Because teacher-delivered, classroom-based nutrition education interventions have become more common, it is imperative that health educators design, implement, and evaluate these interventions to address these complex perspectives and experiences. Further testing and research on program materials by health educators could benefit classroom teachers. As demonstrated in this study, teachers' confidence was related to the simplicity of the provided curriculum. Health educators creating nutrition interventions should be mindful of the classroom teachers and the potential that they may not be well trained or particularly familiar with the topic of nutrition. Some strategies for health educators when creating interventions include keeping material short to balance time constraints, specifically contacting teachers about their available nutrition education time and creating lessons based on this estimate, using familiar educational terms, providing specific and clear instructions, and making activities simple and brief.

When it is feasible, health educators should work together with classroom teachers at the program development stage to better address teachers' needs and facilitate the delivery of high-quality nutrition education for elementary school students. Health educators should consider consulting classroom teachers about factors such as the lesson and activity feasibility, resources and sustainability potential, engagement potential, and any concerns teachers have for the classroom. Teachers know what works best for their classrooms, so health educators should also be flexible with the possibility of balancing fidelity with adaptation. Health educators could pilot test the effectiveness of a curriculum delivered as written versus an adapted curriculum on student outcomes and determine whether it would be appropriate to allow teachers more freedom with the curriculum or to encourage teachers to strictly follow the curriculum.

Health educators should consider investing time and resources into creating interactive programming for classrooms that is low cost and easily accessible. Teachers consistently reported that interactive, hands-on curriculum engaged students and led to demonstrated changes in behavior, knowledge, and self-efficacy. A significant barrier for teachers is that these materials are generally expensive and time consuming to create, so if there is not a frugal solution available, it would be burdensome for teachers to integrate into their classrooms. Health educators should consider creating hands-on lessons for teachers that reuse the same supplies in multiple activities, use low-cost and recyclable supplies, use supplies already common to the classroom, or use durable supplies that could be shared between multiple classrooms.

Interventions that do not provide teachers with solutions to barriers, education to understand the importance of nutrition, or motivation to commit to the program are destined to fail. Trainings are commonly provided with most programs pre-intervention to familiarize teachers with program materials and improve fidelity; however, these trainings generally focus more on intervention expectations for teachers and less on the teachers and their perspectives. Although the themes that emerged from this study are not generalizable due to the qualitative nature of the study, the complexity of themes suggests that health educators are missing an integral component of intervention delivery and should make efforts to address the perspectives of the particular teachers with whom they work. As demonstrated in this study, teachers care about nutrition education and have insights that could potentially improve intervention delivery. Health educators should conduct a needs assessment not only with their target population for intervention but also with the target sample of teachers expected to deliver the intervention. Information gleaned from this assessment can form a foundation for creating trainings or workshops, which can better engage and motivate teachers by addressing the most appropriate topics. Based on results from this study, relevant areas to assess may include barriers, knowledge, confidence, attitude, perceived influence, and motivation. Health educators should also serve as facilitators to active discussion sessions during training, in which teachers can interact with each other to generate a variety of solutions to common barriers, demonstrate effective nutrition education ideas for the classroom, and share successes to increase motivation. Improving nutrition education and program training for teachers has the potential to

improve content delivery and, ultimately, student health outcomes.

Health educators could also benefit their population by facilitating communication between teachers and parents. As our results indicated, some teachers are uncomfortable or feel they may be overstepping by communicating the topic of nutrition to parents. However, children could benefit if nutrition messages were consistent between school and home, and parents may benefit if they are lacking education. Some suggestions to help health educators facilitate communication between parents and teachers include the following:

1. Help teachers open up the lines of communication by providing them with parent newsletters concerning nutrition program(s) in their child's classroom and what their child is learning about.
2. Encourage teachers to make nutrition education part of student–parent conferences so that communication concerning nutrition education becomes a norm for parents.
3. Incorporate a parent component into school-based programming.
4. Assist schools in creating a nutrition fair for parents, in which teachers can get quality face-to-face time to show parents what students are learning and talk to them about nutrition, while having the support of expert health educators nearby.
5. Provide teachers with a quick reference list of tips for communicating with parents.

Future quantitative research should be conducted to determine whether the perspectives demonstrated in this study are present in a larger population and whether training that better addresses both the intervention and the teacher is effective at improving nutrition education and student outcomes.

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