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Lindley Barker

Heather Norman-Burgdolf

Annie Koempel

Katie Pickford

Tammy Stephenson

See next page for additional authors

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Authors

Lindley Barker, Heather Norman-Burgdolf, Annie Koempel, Katie Pickford, Tammy Stephenson, and Dawn Brewer

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Lindley Barker
Heather Norman-Burgdolf
Annie Koempel
Katie Pickford
Tammy Stephenson
Dawn Brewer
University of Kentucky

Sustainable eating may benefit both the environment and human health. Currently, no Extension programs addressing healthy and sustainable eating are available that target adults in communities. Since sustainable eating is a sensitive topic, this project engaged Family and Consumer Sciences (FCS) Extension agents in Kentucky, to garner their community expertise and perspectives on sustainable eating to help develop an appropriate Extension curriculum. By following the Curriculum Development Process for Cooperative Extension Programming model, we involved FCS agents in developing and reviewing a sustainable eating curriculum. The proposed curriculum included content that reflected sustainable eating principles of reducing overconsumption of foods, limiting the consumption of highly processed and packaged foods, promoting consumption of more plant-derived foods, promoting consumption of locally raised foods and animals, and reducing the amount of food waste. Twenty-six structured Zoom interviews with Kentucky FCS agents obtained their views of the acceptability and appropriateness of five proposed lesson outlines on sustainable eating. Themes included 1) acceptable lesson material, 2) minimize jargon and use appropriate language, 3) be mindful of lesson length and being overwhelming, and 4) frame messages around community needs. Results will be used to develop and pilot a full sustainable eating curriculum.

Keywords: environment, sustainable eating, food system, program development, curriculum development, Family and Consumer Sciences, Cooperative Extension

Introduction

The worldwide population of 7.9 billion people is rapidly increasing; by 2050, the global population is expected to reach 10 billion people (Country Meters, 2021; United Nations, 2017). A key issue of concern – given constraints on resources such as land and water – is how to make nutritious food accessible and affordable across the globe without further depleting natural

resources. Resource depletion and a lack of sufficient nutrition present significant risks to the health and well-being of humans and ecosystems (Hoek et al., 2017). A sustainable diet is believed to curb the negative environmental impacts seen in our current food system, while optimizing natural and human resources (Aleksandrowicz et al., 2016). A sustainable diet is defined as a diet with low environmental impact that is accessible, culturally appropriate, and nutritionally adequate (Friel et al., 2014).

As foods are produced for consumption, the food system generates negative environmental impacts at each step of production, processing and packaging, distribution, and consumption of food by shoppers. Negative environmental impacts, such as greenhouse gas emissions, food waste, and particulate matter, are generated and contribute to an unsustainable food system (Friel et al., 2014). The extent of damage generated by food production depends on the amount of land, water, and energy depleted, which is influenced by the processes used during production, the region, and the season in which the product was produced (Friel et al., 2014). These environmental impacts can result in reduced quantities of food produced, damage to the land and water used to grow/produce food, pollution of food, and food waste (Friel et al., 2014). Taken together, these impact the amount and availability of food products generated and the extent to which the local food system is depleted. In addition, along with reducing environmental damage, sustainable eating patterns are associated with decreased chronic disease risk, because the dietary patterns of sustainable eating are associated with healthy food choices (Macdiarmid et al., 2016).

Existing literature lists four main food consumption-related actions to simplify behaviors deemed as “healthy and environmentally sustainable”: 1) reduce food waste; 2) consume more plant-based foods/ local foods and fewer animal-based foods; 3) choose a balanced diet; and 4) limit intake of highly processed and packaged foods (Hoeck et al., 2017; Springmann et al., 2018; Willett et al., 2019; World Health Organization, 2019; Zakowska-Biemans et al., 2019). Shifting food-related behaviors of consumers toward sustainable eating may be a way to promote the health of people and the environment by altering and improving food systems at multiple points. Initially, knowledge and acceptance need to be acquired, as food choices are dependent on the consumer’s willingness to make behavior changes (Hoek et al., 2017).

Kentuckians would benefit from not only the environmental considerations of a sustainable diet, but the health aspects, as well. In Kentucky, poor nutrition and overweight and obesity are prominent issues driven by a multitude of factors. In 2018, Kentucky was ranked 5th in the nation for adult obesity, with 68.5% of adults either obese or overweight (Kentucky Health News, 2019) and the majority of Kentuckians unable to meet daily recommendations for fruits and vegetables (CDC, 2018).

Additionally, because Kentucky is an agricultural state involved in both animal and plant production (Farmland Information Center), Kentuckians as consumers and producers can play an important role by participating in and advocating for sustainable and healthy food systems.

Although food production practices can have negative environmental impacts, these may not be considered, as some Kentuckians are dependent on the production of food for income and sustenance (USDA Economic Research Service (2024)). Moreover, sustainability may not be considered by Kentuckians when it comes to making food purchasing, preparation, or consumption decisions (Van Loo et al., 2017), which makes educating Kentuckians about sustainable eating a necessary first step to improve acceptance among individuals, in hopes of promoting sustainable behaviors.

The benefits of consuming a sustainable diet are well researched (Culliford & Bradbury, 2020; Friel et al., 2014; Hoek et al., 2017; Macdiarmid et al., 2016), but this knowledge is not readily accessible to the public, particularly adults. Only three programs with lesson plans were identified pertaining to this topic, all of which catered to school-aged children and/or teenagers (California Academy of Science; Purdue Agriculture; TROP ICSU). To our knowledge, a sustainable eating curriculum for adults does not exist, but such a program could play a key role in providing the information Kentuckians need to engage in sustainable and healthy eating practices. There is potential to fill this educational gap through a partnership with Family and Consumer Sciences (FCS) within the Cooperative Extension System. FCS Extension incorporates food, nutrition, and health into traditional community programming (United States Department of Agriculture, 2020a, 2020b). The perspectives of FCS Extension agents are crucial in developing an appropriate and accessible curriculum, because they work closely with community members on a range of family- and health-related issues. Smith et al. (2017) used the following definition to define curriculum in Cooperative Extension: *"A curriculum is a coherent progression of educational experiences that addresses a societal issue or need. These experiences are organized sequentially, such that concepts build on one another (vertical organization) and connect to other content areas or real-world situations (horizontal organization). The curriculum needs to be developmentally appropriate, be grounded in relevant learning theories, and provide necessary resources and techniques for effective implementation with the intended audiences in specified learning settings. Finally, a curriculum must be evaluated empirically and shown to realize intended learning objectives."*

To develop effective Extension programming that goes beyond organizing content into learning experiences, it is imperative to integrate the five "curriculum commonplaces" within the seven-step curriculum development model (Smith et al., 2017). The "curriculum commonplaces" include *content, learners, context, educators,* and *curriculum making*. A balance of *content*, or subject matter, is needed so as not to dominate nor be underemphasized in a curriculum. The developmental characteristics of the intended *learners* need to be considered during the creation phase so that the content is relevant to them. *Context* refers to the learning environment, such as a classroom or an informal setting like a 4-H youth development camp. Lesson implementation needs to be appropriate to the learning environment. *Educators* vary in their experience, training, and comfort level with various subjects. Therefore, a curriculum should have content or pedagogical support available to educators. Finally, *curriculum making* involves review and

examination of the curriculum by the developers to ensure balance among the other commonplaces.

The seven steps of the curriculum development process include: (1) identification of a societal need and associated learning objective, (2) organization of content, (3) determination of acceptable evidence of learning, (4) identification and development of learning experiences, (5) preliminary evaluation, (6) pilot testing, and (7) outcome evaluation (Smith et al., 2017). Including Extension agents throughout these seven steps supports the "curriculum commonplaces" and encourages both instruction and learning in Extension programming. In planning and developing our sustainable eating curriculum, we completed step one with Extension agents. To our knowledge, there is no program offered in Kentucky on the topic of sustainable eating. We surveyed agents during their statewide training to gauge their interest in offering a sustainable eating curriculum to their communities. Survey results showed there was interest (data not shown, n=56 agents).

The purpose of the current study was to focus on steps 2 through 5 by evaluating FCS Extension agents' perspectives on sustainable eating practices, as well as to obtain their viewpoints on sustainable eating and their recommended modifications to a proposed sustainable eating curriculum. The findings from this study would be used to further refine a novel program meant to introduce Kentucky adults to a sustainable food system approach with practical actions for improving the sustainability and health of their eating patterns.

Methods

All research procedures were approved by the University of Kentucky Institutional Review Board (#66913). To recruit FCS Extension agents, they were contacted by an FCS Extension Specialist through an existing listserv of FCS Extension agents. Selection criteria included FCS Extension agents in Kentucky. There were no age limits. The goal was to recruit the same number of agents from each of the three main Extension regions across Kentucky: the western, central, and eastern regions. The western region is characterized by a flat terrain conducive to farming and commodity production; agriculture is the driving economic industry in the most western portion of the region (Bladen & Dykeman, 2007). Residents of the mountainous eastern region rely on the service industry, including the school and healthcare systems, for employment (Hansell, 2016; Wright, 2019). The central region includes the most populated counties and cities (Lexington and Louisville) and is the most demographically diverse.

Five lesson outlines were developed for FCS Extension agents to review that focused on four practical dietary strategies that could be considered by consumers: avoiding overconsumption of food, eating more plant-based foods, reducing food waste, and reducing consumption of highly processed and packaged foods (Van Loo et al., 2017) (Table 1).

Table 1. Titles of Lesson Outlines Reviewed by FCS Extension Agents

1. A Win-Win for Our Health and Environment
2. Feed People, Not Landfills
3. Your Community, Your Food
4. Mindful MyPlate
5. Savvy Sustainable Grocery Shopping

Data Collection

Data collection included three tools: a Healthy and Sustainable Eating Questionnaire to assess FCS Extension agent knowledge and attitudes, a questionnaire to collect feedback pertaining to each lesson (Lesson Feedback Questionnaire), and a structured interview.

Healthy and Sustainable Eating Questionnaire

Agents were asked to complete an online questionnaire about sustainable eating prior to receiving proposed lesson materials and again after engaging in a structured interview with a member of the research team. Questions were adapted from the Sustainable Eating Involvement Questionnaire (Van Loo et al., 2017) by including only the statements found within the "involvement in sustainable eating" construct; and the Sustainable Eating Barrier questions from Brodie (2020). Each survey used a five-point Likert scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. Questionnaires also included basic demographic questions: age, race, and ethnicity.

Lesson Feedback Questionnaire

As agents reviewed each lesson outline, they completed an online questionnaire (one for each of the five lessons). These questions supplemented the information collected during structured interviews. Questions included, "what do you think about the series title," "what engaging activities come to mind that would be feasible to include in this lesson," "do you have any thoughts on a marketable and catchy lesson title," "do you have suggestions for better subtitles anywhere within the lesson," "what do you think of the recipes," and "which topics within this lesson would an agent likely need supplemental information for." Data collected from this questionnaire was qualitative and was collected for all five lesson plans.

Structured FCS Extension Agent Interviews

Structured interviews were conducted to determine FCS Extension agents' perceptions of and attitudes towards healthy and sustainable diets and how lesson plans could be culturally tailored to their community. Interviews were conducted and recorded via Zoom by one of three researchers at the University of Kentucky between May and July 2021 and lasted no more than 90 minutes. An interview script was followed by each researcher to guide the interviews and provide consistency between interviewers. During the interviews, the five lesson plan outlines

were discussed. For each lesson plan, the agents were asked questions such as “are there words used in the lesson that would offend your clientele,” “is there any material that needs to be added,” “is there any material that needs to be removed,” and “are there any other thoughts that you have about this lesson that you would like to share.” A graduate student attended all interviews to assess consistency between interviewers; the research team met regularly to assure all proper procedures were followed.

Data Analyses

Descriptive statistics were calculated from the pre-review and post-review Healthy and Sustainable Eating Questionnaires. To detect significant differences between variables (p-value $\leq$ 0.05), the Wilcoxon signed-rank test was used for continuous variables (Sustainable Eating Involvement and Sustainable Eating Barriers) and chi-square tests for categorical variables (sex, race, and ethnicity). All quantitative data were analyzed using SPSS v. 24. Quantitative data were used to determine knowledge and attitudes about sustainable eating behaviors and to assess changes before and after review of the lesson materials. Overall average scores for each of the questionnaires were calculated by averaging the scores of each question within the Sustainable Eating Involvement Questionnaire and within the Sustainable Eating Barrier Questionnaire.

Qualitative data were collected from structured interviews and Lesson Outline Feedback Questionnaires. All interviews were recorded and transcribed verbatim. Initial coding was conducted using stratified coding by interview question. Codes were compared across interview data by question to highlight commonalities and differences, then organized into themes. Findings were confirmed by comparison with data from Lesson Feedback Questionnaires, which provided a source of internal study validity (Merriam & Tisdell, 2015). Data analysis was conducted in Microsoft Excel and Microsoft Word.

Results

Twenty-six FCS Extension agents were interviewed from across the state: eleven from the western region, eight from the central region, and seven from the eastern region. Twenty-two participants completed the pre- and post-review Healthy and Sustainable Eating Questionnaires, and the data revealed most respondents to be non-Hispanic white (95.5%), with a mean age of 45.7 $\pm$14.6 years.

Healthy and Sustainable Eating Questionnaire: Sustainable Eating Involvement

No significant changes were observed in overall scores related to attitudes towards sustainable eating. Table 2 contains the results of the change in perception regarding Sustainable Eating Involvement. The average overall score of the Sustainable Eating Involvement questionnaire increased non-significantly from 3.53 $\pm$0.74 to 3.91 $\pm$0.56 (P=0.054) following review of lesson

material. Only the question, “Sustainable eating means a lot to me” showed a significant increase from pre- to post-review for the Sustainable Eating Involvement questionnaire (*P*=0.029).

Table 2. Change in FCS Extension Agent Perceptions of Sustainable Eating Involvement Following Review of Sustainable Eating Lesson Outline Materials

Question Sustainable Eating Involvement	$\overline{X}^a$	*SD*	*P*-Value*
Sustainable eating is very important to me			
Pre-survey	3.68	.780	
Post-survey	4.08	.572	.083
I care a lot about sustainable eating			
Pre-survey	3.59	.734	
Post-survey	3.92	.640	.157
Sustainable eating means a lot to me			
Pre-survey	3.45	.800	
Post-survey	3.88	.600	**.029**
I am very concerned about the consequences of what I eat in terms of sustainability			
Pre-survey	3.41	.854	
Post-survey	3.76	.663	.100

[a]Sustainable Eating Involvement measured on a 5-point Likert Scale from 1 (strongly disagree) to 5 (strongly agree).
**p*-value of ≤ 0.05 statistically significant.

Healthy and Sustainable Eating Questionnaire: Sustainable Eating Barriers

Perceived barriers to eating sustainably significantly decreased following review of lesson materials. Table 3 contains the results of the change in perception regarding Sustainable Eating Barriers. The average overall score significantly decreased from 2.29 ± 0.457 before material review to 2.08 ± 0.29 (p=0.019) after review. Specifically, agent perception of “I do not know how to eat more sustainably” significantly decreased (*P*=0.003), suggesting that lesson material provided practical approaches to understanding and implementing a sustainable diet. There were no other significant changes in perception of sustainable eating barriers observed from the pre- to the post-review Healthy and Sustainable Eating questionnaire.

Table 3. Change in FCS Agent Perception of Sustainable Eating Barriers Following Review of Sustainable Eating Lesson Materials

Question Sustainable Eating Barriers	$\overline{X}^a$	*SD*	*P*-Value*
"I do not know how to eat more sustainably"			
Pre-survey	2.59	.854	
Post-survey	1.80	.500	**0.003**
"Sustainable eating is expensive"			
Pre-survey	2.77	.813	
Post-survey	2.44	.651	0.185
"My eating patterns do not have an impact on the environment"			
Pre-survey	1.82	.795	
Post-survey	1.72	.678	0.285
"Meat is necessary for a balanced meal."			
Pre-survey	1.95	.653	
Post-survey	1.92	.759	0.480
"Sustainable foods are inconvenient"			
Pre-survey	2.41	.796	
Post-survey	2.08	.572	0.106
"I have no way to get sustainable food"			
Pre-survey	1.91	.526	
Post-survey	1.68	.476	0.157
"Eating meat is an important part of my culture"			
Pre-survey	3.18	1.296	
Post-survey	3.00	.258	0.351
"I do not want to change my current diet"			
Pre-survey	2.41	.590	
Post-survey	2.44	.712	0.813

Table 3. Change in FCS Agent Perception of Sustainable Eating Barriers Following Review of Sustainable Eating Lesson Materials

"I do not have time to prepare sustainable foods"			
Pre-survey	2.18	.664	
Post-survey	2.04	.200	0.317
"Sustainable foods taste bad"			
Pre-survey	1.73	.703	
Post-survey	1.64	.490	0.527

[a]$Sustainable\ Eating\ Behaviors$ measured on a 5-point Likert Scale from 1 (strongly disagree) to 5 (strongly agree).
*p-value of ≤ 0.05 statistically significant.

Structured FCS Extension Agent Interviews

During each interview, researchers asked about the appropriateness and acceptability of lesson materials. Four main themes emerged: 1) the lesson material was acceptable, 2) the importance of minimizing jargon and using appropriate language, 3) the lessons should not be too lengthy or overwhelming, and 4) frame the message around the needs of the community.

Theme 1: Lesson Material was Acceptable

Content of all five of the proposed lessons was generally thought of as appropriate by the agents who reviewed lesson content. A common sentiment among a majority of agents was "I didn't see anything that would turn anybody off." Some agents, however, commented that discussing health is not always the best approach. For example, one agent stated, "Sometimes when we, obviously our job is to promote health, but if we harp on health too much, sometimes it turns people off." This points to a strategy of encouraging healthy behaviors without discussing health itself, which agents have developed through long-term work with their community. Agents stated that community members who attend Extension lessons – especially lessons about eating patterns – are motivated to learn healthy lifestyle practices. One agent shared,

> "I don't think [weight is a sensitive topic] because the majority of people that we see are coming to learn how to eat healthier, because they want to be healthier themselves because there is something going on with them personally, so I think it's a good thing to put [weight] in there."

Another agent added, "I don't think anything's hurtful because we spoke about a healthy weight, and a healthy weight is different for everybody." In other words, community members who

choose to participate in Extension programs that emphasize healthy lifestyle practices are likely to know their weight status and not be offended by discussions of weight.

While weight itself is not a sensitive topic according to most agents, the ways in which weight is discussed and the words and terms used are important. Agents mentioned that the term "healthy weight" is preferable to medicalized terms such as "obesity." For example, one agent said, "Nobody likes the word obesity or fat. What would you call it? Overweight or healthy weight. Those are kind of some of the terms, or maybe help people reach a healthy weight. I wouldn't say its offensive; it was just the truth." Word choice is an important consideration when developing educational material. This is true for discussions of weight as well as other topics.

Agents stated that a positive tone should be kept when discussing weight:

> I think the more that you can focus on this is what is healthy. ... Everybody's going to eat junk every now and then; you know, that doesn't necessarily mean you've got a problem, but that I think the more you can keep things on the positive side, and here are some things that not only are healthier for you, but you will feel better, you'll have more energy. Let that be your focus. The more positive term, you can, and here's the things you can do and there you know some simple, easy changes, yeah, that kind of thing.

This quotation is shared in full to echo what was emphasized above – that focusing on healthy behaviors and lifestyle practices is more effective than discussing body weight alone. In general, agents felt that positive messages – what could participants do or add to their routines – were more likely to be appropriate and adopted.

Theme 2: Minimizing Jargon and Using Appropriate Language

To ensure that lessons are appropriate for community members, agents suggested minimizing jargon throughout all five of the lessons. One specific suggestion was to avoid using the word "consumption." "[Consumption] is not an offensive or turn-off term; it's just something that people don't say," one agent shared, then continued:

> When they talk about eating, they don't usually say 'consumption' or 'overconsumption.' They'll talk about overeating or eating. … Just talking like you were talking to a friend or talking to an in-person class and using those terms might hit home a little bit better.

In short, education material should reflect the manner of speaking that is familiar and comfortable to its intended audience.

The lesson concerning reducing food waste contained several suggestions for more appropriate language. It was suggested that wording should be culturally unbiased, "I'm just wondering if

dollar should be used…versus bucks." The agent pointed out that to someone whose first language is not English, "bucks" may be confused with a male deer. Using "dollar" is a straightforward way of preventing miscommunication or misunderstanding. Wording, according to another agent, should also be culturally sensitive, specifically when discussing canning, "At-home canning, I think just saying canning or food preservation, because it could be frozen, it may not be canned. Or preserving." In other words, using a term like "food preservation" is more inclusive because of the wide range of food preservation techniques employed throughout the state.

Agents suggested that it is necessary to use appropriate and clear wording and define food waste, as food waste is created by everyone as a natural byproduct of cooking and cannot always be avoided. One agent pointed out:

> "They like to refer… to home food waste as wasted food, not food waste, because people waste food…, we all create food waste when we peel a cucumber, we, something with a peel, that's food waste, but wasted food are things like we throw away food off of the table, or we throw away the apple that wasn't good that maybe could have been applesauce."

While such clarifications to language may seem pedantic, they are crucial to audience comprehension of the education material and their role in preventing food from becoming waste.

Theme 3: Lessons Should Not be Too Overwhelming or Lengthy

Agents were intimately familiar with the need to keep lessons simple, short, and engaging. Many agents expressed that there is a delicate balance between presenting meaningful information while keeping their participants' attention and not overwhelming them. Ideally, the information for a specific topic would fit into a one- to two-page (front and back) handout for distribution at community events. One lesson in particular was found to be too lengthy and potentially overwhelming for participants. Because of the breadth of information presented in this lesson, agents suggested introducing some of the material sooner or breaking the lesson up into multiple parts, even if that meant extending the total number of lessons.

Another suggestion for simplifying complex information was to break it down. For example, when asked their opinion of a theme statement to be included on each lesson to orient participants to what sustainable eating means, agents found that it was overwhelming and too lengthy. To best facilitate participant engagement and understanding, one agent suggested "it could be broken down into bullet points, [that] would even help visually." Another agent agreed, stating that the theme statement contained a lot of good information that just needed "to be in…bite-size [pieces], where [participants] can take it in and absorb it." Rather than cutting material out that was perceived as too lengthy, agents here suggested visually breaking the information up to facilitate better learning.

Theme 4: Frame the Message around the Needs of the Community

As mentioned above, framing a lesson through only the lens of health can be a distraction for participants. Participants shared that budgeting and economics are two additional topics that can improve the acceptability of lesson material and frame it around the needs of the community. As one agent stated,

> Tie in budgeting and saving money, and that always goes over really well, just realizing and thinking about how much you're throwing away food, but also you're throwing away money, and so I think that is another good way to get people interested in the topic.

This reinforces what agents shared about discussions of weight – that focusing on positive behaviors can lead to the implementation of healthy and sustainable lifestyle practices. Graphic representations of information about the financial benefits of a healthy and sustainable diet were also suggested as another 'bite-size' approach to sharing information.

Agents suggested that they wanted the material to be framed specifically for their community members or to at least present options where resources are scarce. Some parts of the state – particularly in rural areas – do not have recycling programs. In discussions of proper recycling, community members may feel hopeless or as if there is nothing they can do. As one agent pointed out,

> In several spots, we're talking about recycling, which is important. But, like, we didn't have recycling in my county for a long time, and then we got recycling and now we don't have that. And that's also a political thing, um, but maybe talking about… finding a way to recycle when you don't have recycling in your community.

One agent mentioned "reducing" for those who do not have the resources in their county to recycle, particularly since reducing should be the first step toward living sustainably.

Along with graphic representations, agents expressed that examples play a large role in facilitating understanding of lesson material. Information that might be new to participants would benefit from either graphic representations or specific examples.

Discussion

The purpose of this study was to gather feedback from Kentucky FCS Cooperative Extension agents on the appropriateness of content included in a proposed Extension Sustainable Eating curriculum. Involving agents in this manner, in the preliminary stages of curriculum development and formative evaluation, is critical to establishing effective Extension programming (Smith et al., 2017).

Specific to our situation and topic of sustainable eating, our evaluation methods, particularly the structured interviews that were developed to identify the appropriateness and acceptability of lesson materials, revealed four main themes that significantly contributed to the editing and further development of lesson materials. Themes included: 1) the lesson material was acceptable, 2) the importance of minimizing jargon and using appropriate language, 3) the lessons should not be too lengthy or overwhelming, and 4) frame the message around the needs of the community.

An important aspect of our Extension Sustainable Eating curriculum project is that the research team is following the seven-step approach outlined by Smith et al. (2017) for effective curriculum development for use in Cooperative Extension programming. The interviews and the Lesson Feedback Questionnaire were the research team's initial opportunity to ensure that the five "curriculum commonplaces" are being incorporated. We plan to continue revisiting the "curriculum commonplaces" as the curriculum is pilot-tested and finalized.

The seven steps of the curriculum development process include (1) identification of a societal need and associated learning objective, (2) organization of content, (3) determination of acceptable evidence of learning, (4) identification and development of learning experiences, (5) preliminary evaluation, (6) pilot testing, and (7) outcome evaluation. Up to this point in our planning and development of this curriculum, we have completed steps one through five with agents. Step one was described in the introduction. For step two, we developed lesson outlines for review by agents, of which the results are presented in this paper. Step three was incorporated using the pre- and post-review Qualtrics questionnaires to assess whether agents' perceptions of sustainable eating changed after reviewing lesson outlines. Step four involved the FCS agents in reviewing the outlines for each lesson and obtaining their feedback on how materials could be made more appropriate to support the learning experience for Kentuckians. Step five, preliminary evaluation, involves content organization, order of learning experiences, and determination of educational goals. Interviews with agents were conducted to review the material and determine what changes needed to be made before finalizing the lesson plans and piloting them with community members. The curriculum, finalized by the research team for pilot-testing with community members, incorporated feedback identified by the current study into the lesson plans, while ensuring all necessary materials were included on the topic of sustainable eating.

Along with following the outlined steps for Extension program development, our study also sought to assess whether agent perceptions about sustainable eating changed following their review of the proposed lesson material. Overall, results suggested that providing information on sustainable eating can result in positive changes in perception and reduce perceived barriers. Specifically, our results demonstrated a small, but significant decrease in the agents' overall average perception of barriers associated with healthy and sustainable eating following their review of lesson outlines. Increasing knowledge and improving attitudes towards sustainable eating is an important first step towards increasing involvement in sustainable eating (Hoek et al., 2017). Once knowledge is obtained, however, making sustainable food choices is based on

the consumers' willingness and ability to make behavior changes (Culliford & Bradbury, 2020; Van Loo et al., 2017; Zakowska-Biemans et al., 2019). The demonstrated positive changes in agents' attitudes following review of lesson outlines is encouraging and reinforces the decision to use the Cooperative Extension System model to educate community members about healthy and sustainable eating. Furthermore, involving agents in the development phase of a curriculum may increase agent buy-in, which is critical because they are integral, important members of the community who have the potential to influence collective decisions and norms related to nutrition (Kegler & Butterfoss, 2012). Community members may establish long-term relationships with their FCS Extension agents, because the agents often live in the communities they serve, build relationships with the community, convince community members of the need for change, and help employ and maintain changes (Riley, 2008). These are all key characteristics of "agents of change" (Center for Community Health and Development, 2017). Extension agents who recognize the value and importance of sustainable eating can communicate the concept to community members, thereby promoting positive behavior changes among them (Brewer et al., 2019). As well, increasing community members' knowledge and acceptance of sustainable eating may increase their participation in and advocating for sustainable and healthy food systems (Kegler & Butterfoss, 2012).

The results of this study are limited by using a convenience sample of agents from only one state who volunteered to participate. Self-selection may suggest that participating agents already had an interest in, knowledge of, or positive attitude towards sustainable eating or members of the research team. Furthermore, we did not account for recruiting the same number of rural and urban counties within each region. In our study, we recruited agents from a total of fifteen rural and eleven urban counties. Community members from rural versus urban communities may have different perspectives on the acceptability and appropriateness of lesson materials. Our study did, however, obtain feedback from all three Extension regions in Kentucky.

Conclusion and Future Research

In conclusion, in working towards establishing an effective Extension program, our study engaged FCS Extension agents in the early stages of program development, specifically formative evaluation. Feedback was gathered from Extension agents located across Kentucky about the appropriateness of a proposed Extension curriculum on healthy and sustainable eating. Interview data revealed four major themes. First, the lesson material was found to be acceptable and appropriate for adults living in Kentucky. Second, agents highlighted the importance of minimizing jargon and using appropriate language. Third, the lessons should not be too lengthy or overwhelming – agents suggested breaking long lessons up or employing graphics or bullet points to simplify key messages. Finally, agents suggested framing the message around the needs of the community – specifically by incorporating financial concerns and other positive behaviors.

Qualitative and quantitative results showed that agents increased their perception of sustainable eating by reviewing lesson material. Importantly, agents' perception of the sustainable eating barrier "I do not know how to eat more sustainably" significantly decreased after review of lesson material. This is an important finding, as invested instructors are more effective when teaching, ensuring that misconceptions and questions from participants are addressed (University of Nothern Iowa).

Agent feedback on lesson content and formatting guided the research team through curriculum refinement to prepare for piloting the curriculum with community members. Pilot-testing is step six in the framework of developing effective Extension programming (Smith et al., 2017). Future research will complete step seven, outcome evaluation, by investigating changes to community members' attitudes and knowledge of healthy, sustainable eating before and after participation in a Sustainable Eating Extension curriculum.

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Lindley Barker is a clinical registered dietitian at the University of Kentucky Hospital.

Heather Norman-Burgdolf is an associate Extension professor in the Department of Dietetics and Human Nutrition at the University of Kentucky.

Annie Koempel is a registered dietitian and the medical anthropologist for the American Board of Family Medicine.

Katie Pickford is the harvest and crew lead for Lakeview Hill Farm and Market.

Tammy Stephenson is a professor in the Department of Dietetics and Human Nutrition at the University of Kentucky.

Dawn Brewer is a registered dietitian and an associate professor in the Department of Dietetics and Human Nutrition at the University of Kentucky. Please direct correspondence about this article to dawn.brewer@uky.edu.

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