

Policy, System, and Environmental Approaches: Determining Factors of PSE Among Extension Educators in Oklahoma

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Abstract

Background: A nation-wide focus on Policy, Systems, and Environmental (PSE) strategies has emerged as a complimentary approach to individual based strategies for obesity prevention. PSE changes are community-based strategies that aim to create environments that facilitate healthy eating and physical activity to support obesity prevention. The efforts are often planned and implemented through collaborative efforts with agencies, such as Cooperative Extension and community partners. The extent to which Oklahoma Cooperative Extension Educators use PSE strategies in their communities as well as the factors that affect their intention to carry out PSE strategies is not known.

Objective: To determine the extent to which Extension Educators perceive obesity as a problem in their community and identify factors that influence Extension Educators' intentions to use PSE strategies as an approach to address public health issues.

Design: The cross-sectional study used a 66-item online survey administered to Oklahoma State University Extension Educators in the 4 areas of Family and Consumer Sciences, Nutrition Education Assistants, 4-H Educators, and Agriculture Educators.

Results: The Extension Educators identified obesity, diabetes, and heart disease as public health concerns. Three of the four identified contributing factors were environmental in nature, including availability of fatty and sugary foods, TV/screen time, perceived price of healthy food, and lack of nutrition knowledge/skill. They key components identified in the present study were Extension resources, Educators' attitudes and beliefs reflecting outcome expectancy of using PSE strategies, and networking with community agencies and organizations. All components are constructs of the Theory of Planned Behavior including Perceived Control, Attitudes and Beliefs, and Networking (social norms).

Conclusion: Findings from this study provided insight to factors related to Oklahoma Extension Educators' intent to use PSE approaches. The findings will be used to develop a second survey that will be applicable specifically for Oklahoma Extension Educators to identify if intentions differ between groups of educators, which will inform development of PSE training and technical assistance.

Introduction

Obesity has become a serious problem in the United States: nearly 40% of adults and 18.5% of children are obese, according to the most recent National Health and Nutrition Examination Survey report. There have been strategies developed to lower the incidence and prevalence of this disease that include a focus on changing the social and physical environments in which we live rather than relying on individual level strategies alone. Individual knowledge, willpower, and decision making must be addressed alongside environmental factors so that the behavior change can be successful. Instead of only encouraging consumers to make healthier choices through nutrition education, we must make changes in the environment to make healthy options more available and desirable than unhealthy alternatives. Policy, systems, and environmental approaches can be used to influence multiple levels of the Socio-Ecological Model simultaneously. Policy, systems, and environmental changes are community-based strategies that aim to create policies, systems, and environments (PSE) that facilitate healthy eating and physical activity environments that support obesity prevention. Policy changes focus on ordinances, rules and regulations, and laws at local, state, and national levels. System changes focus on how organizations function and connecting multiple organizations in the community with one another in order to bring resources and products together for their residents. Environmental change could include efforts such as updating community parks, installing bike racks, and making healthier choices more desirable in grocery stores by signage and shelving improvements.

The Centers for Disease Control and Prevention (CDC), along with many other organizations, have supported various communities in their efforts to create "healthy people living in healthy places". There is a pressing need to increase the familiarity and expertise of those working to promote obesity prevention with the processes and activities that facilitate PSE approaches. Cooperative Extension, which has a positive influence and credibility in communities, is able to carry out these PSE strategies with the help of organizations like the CDC. Extension educators are in a unique position that allows them to carry out PSE approaches by forming coalitions with multiple partners in the community, engaging with various stakeholders, and connecting with individuals in the community as well, which optimizes capacity to carry out PSE strategies. However, the extent at which Extension educators carry out PSE strategies in their communities and the factors that affects their intentions to carry out PSE strategies is unknown. The findings of this study will be used to develop a second survey that will be applicable specifically for Oklahoma State University Extension educators which will inform development of PSE training and technical assistance.

The Theory of Planned Behavior (TPB) posits that an individual's attitude, normative beliefs, and intentions together with perceived behavior control or "self-efficacy" directly influence their intentions to perform a behavior. Attitudes and beliefs are the overall evaluation of the behavior by the individual and the extent that a behavior will produce a certain outcome. Social norms or normative beliefs assess the social pressures on individuals to perform or to not perform a behavior¹⁹. Perceived control or self-efficacy is the belief that one has access to the knowledge, skills, and resources needed to perform the behavior successfully. Intentions are indications of how hard people are willing to try and how much effort they are planning to exert in order to perform a behavior. Figure 1 illustrates the conceptual model for TPB when applied to Extension educator's use of PSE. In Oklahoma, the extent to which factors such as attitude or beliefs towards PSE, perceived control to carry out PSE strategies, social norms, and Extension educator's perceived community readiness effect Extension educator's use of or intention to use PSE strategies has not been studied.

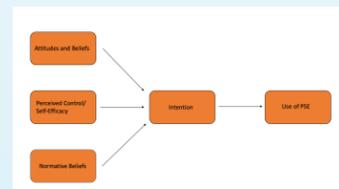
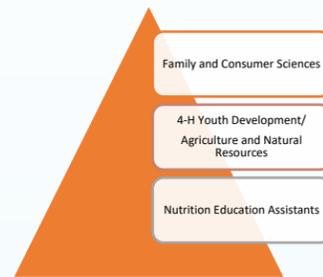


Fig. 1 Conceptual model of Extension Educator's use of PSE based on the Theory of Planned Behavior

Methodology

Participants: The study was conducted with a sample of Oklahoma Cooperative Extension educators associated with Oklahoma State University in Oklahoma, USA. A quantitative survey was completed by 45 Extension educators representing each area of Cooperative Extension including Family and Consumer Sciences, 4-H Youth Development, Agriculture and Natural Resources, and Nutrition Education Assistants (NEAs). Due to low response in the 4-H and Agriculture and Natural Resources groups, it was decided to group these two together into one group. This was justified by the fact that many educators who work in these areas may serve a dual role in both of these areas. The final grouping of three groups were as follows: Family and Consumer Sciences, NEAs, and 4-H Youth Development/Agriculture and Natural Resources. An equal number of participants were selected from each group, n=15.



Recruitment: Participants were recruited to participate via their Oklahoma State University email that was obtained from the Oklahoma State University Extension Office. Fifteen participants were randomly selected within each of the three groups to total 45 participants. Recruiting continued until 45 participants had been reached. Researchers attended the Cooperative Extension 2020 Biennial Event to promote participation in the study. A flyer was placed in each educator's packet that attended the event (see appendices). Supervisors from each of the 4 areas of Extension were contacted to help promote participation.

Survey: A 66-item survey developed in a previous study by Cornell University that examined the relationship between constructs of background factor and beliefs towards using PSE strategies and reported use of PSE strategies to prevent obesity among nutrition educators in Extension.⁵ Changes were made to the survey to make it more specific to Oklahoma Extension educators by changing the programs that were referenced in questions to include programs offered in Oklahoma rather than New York. The survey was administered electronically to the participating Extension educators. The survey for this paper was generated using Qualtrics software, Version July, 2020 of Qualtrics. The survey was then disseminated to participants by email in March 2020. Reminder emails were sent prior to the survey and two weeks after the survey to increase survey responses.

Statistical Analysis: All analyses were conducted using SPSS (version 24, IBM Corp., Armonk, NY, 2016). From the 66 item survey results, 52 items were analyzed. The 14 items that were excluded included demographics and job characteristics that were text responses. The 52 items were analyzed using principal component factor analysis followed by an oblique rotation, specifically direct oblimin. A maximum iteration for convergence of 50 was performed. A scree plot was performed to examine the eigenvalues and show the natural break point in the data which indicated the number of factors to retain. The pattern matrix was examined for factor/item loadings. A factor with fewer than three items was considered weak and unstable. A factor with five or more strongly loading items (.50 or better) indicated a solid factor. Items with a loading coefficient >0.5 on one factor were retained. Cronbach's alpha test was also performed to test for internal consistency of the components. The remaining items were divided into demographic characteristics and employment characteristics. Demographic characteristics included sex, highest level of education, and age range. Frequency analysis was used to calculate the percentage of each response option as a percentage of the total. Employment characteristics included number of years in Extension, years of experience in other social services/community/non-profit organizations, and average hours per week in Extension job. Employment characteristics were represented with means and standard deviations.



Results

The majority of the participants were female (82%), 46 years of age or older (68%), and had bachelor's degree or higher (78%), with 42% having earned a MS degree. The average number of years working in Cooperative Extension was 10.7 ± 9.6 years (n=43). The average number of years in other social services/community/ non-profit organizations was 10.9 ± 10.8 years (n=44). The average hours per week working in their Extension job was 45.3 ± 8.1 hours.

Beliefs about public health issues and their contributing factors were also assessed. The Extension educators agreed obesity, diabetes, and heart disease were public health issues. On the Likert scale of 1-5, with 5 being strongly agree the health issue is of public concern, obesity ranked 4.6 ± .6 (n=44), diabetes was 4.6 ± .6 (n=44), and heart disease was 4.6 ± .5. When assessing their beliefs of contributing factors to these public health issues, availability of fatty and sugary foods (4.5 ± .6), TV/screen time (4.3 ± .8), perceived price of healthy food (4.2 ± .8), lack of nutrition knowledge/skill (4.1 ± .9), and genetics (4.0 ± .6) were all among the highest-ranking contributing factors. Further findings are detailed in Table 1.

Table 1. Extension educators' beliefs about public health issues and contributing factors.

Public Health Issue and Contributing Factors	FCSEducators n=15	NEAs n=15	4-H/NEAs n=15	Total n=45
Public Health Issue				
Obesity	4.6 ± .4	4.5 ± .5	4.3 ± .6	4.6 ± .6 ^{*(n=44)}
Diabetes	4.7 ± .5	4.6 ± .6 [†]	4.3 ± .6	4.6 ± .6 ^{†(n=44)}
Heart Disease	4.6 ± .5	4.7 ± .5	4.5 ± .6	4.6 ± .5
Contributing Factors				
Genetics	4.0 ± .6	3.9 ± .7	3.9 ± .5	4.0 ± .6
Hormones/low metabolism	4.0 ± .6	3.9 ± .9	4.0 ± .5	3.9 ± .7
Low self-esteem	4.2 ± .4	3.9 ± .7	3.9 ± .9	3.9 ± .7
Lack of willpower	3.9 ± 1	3.8 ± .6	4.1 ± 1	3.9 ± .8 ^{†(n=44)}
Low income/ unemployment	3.6 ± .9	3.8 ± 1.1	3.5 ± .9	3.6 ± 1
Lack of nutrition knowledge/skills	4.2 ± .9	4.5 ± .6	3.7 ± 1	4.2 ± .9
TV/screen time	4.3 ± .6	4.2 ± .9	4.1 ± .7	4.2 ± .8
Perceived price of healthy food	4.4 ± .8	4.3 ± .5	3.9 ± 1	4.2 ± .8
Driving culture (i.e. automobiles)	3.6 ± .6	3.5 ± 1.1	3.9 ± .6	3.5 ± .8 ^{†(n=44)}
Availability of fatty and sugary foods	4.7 ± 1	3.5 ± 1.1	4.4 ± .7	4.3 ± .6
Power of media/advertising	3.9 ± 1.2	3.9 ± .8	4.1 ± .7	3.9 ± .9

* All participants did not answer the question, n represents number of responses. Public health issues were assessed using a scale of 1-5, with 1 being "not a problem at all" and 5 being "very serious". Contributing factors to public health issues were assessed using a scale of 1-5 as well, with 1 being "strongly disagree" and 5 being "strongly agree".

The factor component analysis and examination of the output resulted in three extracted factors. The scree plot initially indicated there to be six components. However, after further comparison with the pattern matrix, three components were not retained due to overlapping on the scree plot. Three definite components were observed. The scree plot results are presented in Figure 2.

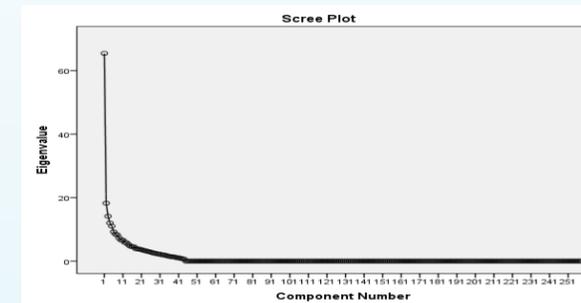


Figure 2. Scree plot from factor analysis indicating components.

The three retained components were described and labeled as: Perceived Control, Attitudes and Beliefs, and Networking. The first component, Perceived Control, included 15 items with a factor loading >.5 factored into Extension educators' perceived control for carrying out PSE strategies in their community. The items were summarized as how readily available respondents' resources were and the perceived importance of PSE strategies by other OCEs (Oklahoma Cooperative Extension Services) administrators and staff in their workplace. The Cronbach alpha was .979 for the Perceived Control component.

The second component, Attitudes and Beliefs, included five items with a factor loading >.5 factored were summarized as the extent of importance of PSE strategies in their job, how committed they believe agency partners were to carrying out PSE strategies, and if they believe PSE strategies fall into the scope of their job. The Cronbach alpha was .944 for the Attitudes and Beliefs component.

The third component, Networking, resulted in three items with a factor loading >.5. These items factored into Extension educators' perceptions of the community's normative beliefs as well as the community readiness to support PSE approaches. Items are summarized as freedom to collaborate and actual collaboration with agency partners as well as politics of partnering agencies were identified. The Cronbach alpha was .881 for the Networking component.

Discussion

Results of the present study are supported by the Theory of Planned Behavior (TPB) that posits that an individual's behavioral intentions are directly influenced by their beliefs about expected outcomes, normative beliefs about what others expect them to do, and perceived behavior control or "self-efficacy". The theory can be used to design interventions to motivate people to make a behavior change. The key components identified in the present study are all constructs of the TPB: Perceived Control, Attitudes and Beliefs, and Networking (social norms). These components not only provide insight to the reasons Extension Educators' use PSE approaches, but are also relevant in designing programs to motivate and activate stronger intentions and use of PSE approaches. Understanding and using PSE approaches is imperative for Extension Educators, as both the CDC and Institute of Medicine recommend PSE approaches for the prevention of chronic disease because these strategies are more sustainable and impact a greater population than individual behavior changes. Furthermore, the findings of this study indicate that intention to use PSE approaches to improve health outcomes include both internal and external factors. The SEM assumes that not only do multiple levels of influence exist, but that these levels are interactive and reinforcing. At the individual level, are Extension Educators' knowledge, skills, attitudes, and beliefs about PSE approaches and the effectiveness or importance of using these approaches for obesity prevention. The interpersonal level includes Extension Educators' relationships with their staff, supervisors, and campus faculty and how they believe the Extension Educators should use PSE approaches in their job. The organizational level includes the different sectors of stakeholders in their community that are involved in PSE approaches. Programs that intervene at multiple levels tend to have greater success.

A strength of this study is the response of 45 Extension Educators representing Family and Consumer Sciences, Nutrition Education Assistants, 4-H Educators and Agriculture Educators. This sample represents 16% of the Extension Educators in Oklahoma. Hill reports that when working with a total population between 30-500, a sample size that is 10% of the population is recommended. Another strength would be the fact it was a strictly online survey in which there was not a face-to-face interviewer, researchers were able to avoid social desirability bias. A limitation of this study would be the response burden of the survey. The survey was very lengthy, with the average time spent on the survey being 7.75 hours. Even though the survey was formatted so that participants could leave and come back, as the survey progressed, participants may have become fatigued resulting in a decrease in accuracy or quality of their answers. It is plausible that respondents more interested in using PSE approaches were more committed to completing the survey.

Conclusion

In conclusion, findings from this study provided insight to factors related to Oklahoma Extension Educators intention to use PSE approaches. The factors include availability of Extension resources, attitudes and beliefs reflecting outcome expectancy of using PSE approaches, and networking with community agencies and organizations. While knowledge and skills did not emerge as a factor, previous research has shown that it plays an important role in using PSE approaches²⁰. The findings of this study will be used to develop a second survey that will be applicable specifically for Oklahoma State University Extension Educators which will inform development of PSE training and technical assistance.

This study identified factors that explain Oklahoma Extension Educators' intention to use PSE approaches to address prevention of obesity, diabetes, and heart disease. Before developing training, there is a need to investigate if differences exist between groups of educators – Family and Consumer Sciences, Nutrition Education Assistants, 4-H Educators and Agriculture Educators. As such, the findings from this study will be used to develop a condensed survey to assess differences between groups of educators. Because networking with agency and community organizations is central to implementing PSE programs⁵, there is an implication for Extension Educators to be trained to assess readiness and intention of community organizations, coalitions, funders, and even health professionals to engage with Extension Educators to develop and implement PSE programs.

Acknowledgements

I cannot express enough thanks to my committee for their continued support and encouragement: Dr. Deana Hildebrand, my committee chair; Dr. Jill Joyce; Dr. Janice Hermann; and Candace Gabel, MS. I offer my sincere appreciation for the learning opportunities provided by my committee.

My completion of this project could not have been accomplished without the participation of the Oklahoma Cooperative Extension Educators to which I offer my utmost gratitude.

SNEB Competencies: 8.3, 8.5, 8.11