

6-1-2018

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Recommended Citation

Chao, M. G., & Fraser, A. M. (2018). Readiness of Congregate Nutrition Sites to Deliver Nutrition Education to Older Adults. *Journal of Extension*, 56(3). Retrieved from <https://tigerprints.clemson.edu/joe/vol56/iss3/12>

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Abstract

Title III of the Older Americans Act requires congregate nutrition sites (CNSs) to provide nutrition education. In 2015, we assessed 19 CNSs in Appalachian South Carolina for nutrition education readiness. Nutrition education readiness and general education readiness were both low. Overall, the CNSs were not ready to deliver education interventions due to lack of training/education, funds, drivers, and communication technologies. Addressing these problems could improve the likelihood that education would be effective. The readiness concepts described here can be used by Extension educators to determine whether delivery sites are ready to effectively provide education programs.

Keywords: [aging](#), [community intervention](#), [health education](#), [needs/assets assessment](#), [readiness](#)

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Introduction and Background

In 1965, the U.S. Congress passed the Older Americans Act (OAA), which aims to provide support services for older adults (Administration for Community Living, 2017). Title III of the act addresses the delivery of nutrition services to older adults through regional Area Agencies on Aging (AAAs). These nutrition services are provided to older adults at congregate nutrition sites (CNSs). Per the OAA, each CNS must provide nutrition education each month.

Little evidence is available to show the effect of OAA-required nutrition education. One systematic literature review yielded only three randomized controlled trials of interventions provided as part of the OAA (Bandayrel & Wong, 2011). Because each study examined the effect of a unique and specific nutrition education intervention and sample sizes differed greatly, results were difficult to compare (Kupka-Schutt & Mitchell, 1992; Mayeda & Anderson, 1993; Mitchell, Ash, & McClelland, 2006). Only one study (that with the largest sample size) yielded significant, positive change in dietary behaviors, specifically in use of dietary supplements (Mitchell et al., 2006).

Although additional research has been published since that review (McClelland, Jayaratne, & Bird, 2013), the limited evidence about nutrition education delivered within CNSs demonstrates the need to study its effect. Theoretically, if one first understands the environmental context that might positively or negatively influence intervention outcomes (Michie et al., 2005), one can judge whether or not that context (such as an institution) is capable of supporting the needs of an effective intervention. An institution such as a CNS can only deliver an

intervention to the extent that necessary resources are in place, making the institution ready to deliver. Specifically, facilities, funding, and manager education are some of the resources that must be available for a CNS to be ready to deliver nutrition education.

Our aim was to assess the readiness of CNSs in the Appalachian region of South Carolina to deliver nutrition education. Considering the rural nature of Appalachian South Carolina, we expected that facilities and resources differed across sites, a circumstance that could influence effective delivery. Our study findings are relevant to the many Extension educators involved in providing nutrition education to CNS participants across the United States.

Method

The Clemson University Institutional Review Board approved all methods used in our study. Informed consent was obtained from all participants before data collection began.

Sample

In April 2014, we contacted the managers of all CNSs in the six Appalachian counties of South Carolina ($N = 23$) by telephone to schedule site visits. If we received no response, we left a message and placed the call at least once more. We visited 21 of the 23 sites as two CNSs were unavailable for site visits. We collected data at only 19 sites because one manager would not give consent and another failed to answer the questions specifically for the main site at which she worked (instead answering only generally for multiple sites under her supervision).

Instrument Development

We designed a Readiness-to-Deliver Assessment (RDA) instrument, adapted from the Service Availability and Readiness Assessment instrument (World Health Organization, 2013), to assess physical, organizational, and institutional factors believed to be associated with the readiness of CNSs to deliver education interventions. The RDA instrument (111 items) covered six topic areas: resource availability—41 items (e.g., "Is a kitchen available?"); training/education resources—12 items (e.g., "Has manager received nutrition training?"); service availability—40 items (e.g., "Number of paid staff drivers"); policy/administration—five items (e.g., "Does facility receive adequate funds?"); general facility characteristics—four items (e.g., "Types of services provided"); and social environment—nine items (e.g., "Number of group activities per day"). We conducted interviews with representatives of the South Carolina Lieutenant Governor's Office on Aging (SCLGOA), the Appalachian AAA, and two of the five provider organizations in the Appalachian region to evaluate each item on the RDA instrument to ensure that it would be easily understood by CNS managers. Following the interviews, we modified the instrument to reflect interviewees' suggestions.

Data Collection and Analysis

We administered the RDA instrument between February and July 2015 at all participating CNSs. We also created a scoring system to assign readiness scores. As this was the first study of its kind and we were unaware of any existing theories to inform the design of a readiness score, we selected 12 items (from various sections of the RDA instrument) that we believed to be associated with nutrition education readiness (NER) and assigned a point value to each potential response. As well, we selected 22 items (also from various sections of the RDA instrument) believed to be associated with the sites' general education readiness (GER) and assigned a point value to each potential response. We calculated two mean scores—NER score and GER score. Responses to the

remaining 77 items were not included in the readiness scores, but we analyzed those responses to describe the CNSs. Table 1 lists the items included in the NER score, and Table 2 lists the items included in the GER score. Both tables indicate from which topic area each score item originated. A higher score on each scale indicated a higher degree of readiness; thus high scores were desired. Varying degrees of readiness were expected across CNSs. For instance, one CNS could receive topic area scores that were high (defined as 85% or greater), somewhat low (70%–84%), low (56%–69%), and very low (55% or less). However, to identify which topic areas needed improvement to generally increase readiness across all CNSs, we calculated average readiness scores per topic area, rather than per CNS.

Table 1.

Point Values of Responses to Nutrition Education Readiness (NER) Items on the Readiness-to-Deliver Assessment (RDA) Instrument

Topic area	Subtopic area	RDA item	Rationale for inclusion in NER score	Ready (1 point)	Somewhat ready (0.5 point)	Not ready (0 points)	Maximum possible score
Resource availability	Facilities	Kitchen available	To prepare, conduct, and clean up after cooking demonstrations	Yes		No	1
		Kitchen lock	To protect cooking supplies from other users of the building	Yes		No or no kitchen	1
		Private room available	To collect anthropometric measurements (height, weight, blood pressure)	Yes		No	1
		Hard floor in private room	To set up stadiometer and weight scale properly	Yes	Available but not private or yes and no private room	No or no private room	1
		No/thin baseboards in private room	To set up stadiometer flush against a wall, as per manufacturer instructions	Yes	Available but not private or yes and no private room	No or no private room	1
		Electrical outlet in private room	To plug in blood pressure meter	Yes	Available but not private or yes and no private room	No or no private room	1
	Equipment	Space available in refrigerator or freezer	To store cooking demonstration perishables	Yes		No	1

Training/education resources	Training in nutrition	To equip managers to educate others on nutrition topics	Yes	No	1
	Access to nutrition education materials	To prevent managers from having to create or find materials to meet the requirement	Yes	No	1
	Written instructions or handouts provided through provider organization	To ensure proper and consistent delivery across sites	Yes	No	1
	Clarity and conciseness in instructions	To ensure that managers understand directions and can deliver materials properly	Yes	No or no instructions provided	1
	Confidence in ability to deliver nutrition education	To ensure managers' ability to educate others	Yes	No	1

Table 2.

Point Values of Responses to General Education Readiness (GER) Items on the Readiness-to-Deliver Assessment (RDA) Instrument

Topic area	Subtopic area	RDA item	Ready (1 point)	Somewhat ready (0.5 point)	Not ready (0 points)	Maximum possible score
Resource availability	Facilities	Number of separate rooms	2 or more ^a	1		1
		Storage room available	Yes		No	1
		Storage room lock	Yes		No or no storage room	1
		Main room darken	Yes		No	1
		Main room capacity to accommodate limited mobility	Yes		No	1
	Equipment	Functional TV available	Yes		No	1
		TV can be connected to a DVD player	Yes		No or no TV	1
		Functional DVD player available	Yes		No	1

		TV located in the main room or TV and DVD player can be moved to main room ^b	Yes		No or no TV or DVD player	1	
Communications		Functioning landline phone	Yes		No	1	
		Functioning cellular phone	Yes		No	1	
		Functioning computer	Yes		No	1	
		Email or Internet	Yes		No	1	
		Type of Internet service	High-speed		Dial-up or other	No Internet	1
		Website or web page	Yes		No		1
		Best and quickest way to contact manager	Landline telephone, cellular telephone, or email			[Does not wish to be contacted]	1
Training/education resources		Training in adult education	Yes		No	1	
Service availability	Workforce	Managers	1 or more			1	
		Volunteer drivers	1 or more			1	
		Paid staff drivers	1 or more			1	
	Service utilization	Days open for group dining	5 days per week	2–4 days per week	1 day per week or less	1	
Policy/administration		Adequate funds	Yes		No	1	

^aWe believe that 2 or more separate rooms are preferred within a site so that older adults in attendance may select to participate in the education intervention or go into another room. ^bIf the TV was either already located in the main room or could be moved into the main room, the site received 1 point.

Results

Site Characteristics

All sites were open at least 2 days per week, and many (14) were open for group dining 5 days per week. Days of highest attendance were Mondays (4), Wednesdays (6), and Fridays (4). For each site, on the day of highest attendance, the number of participants ranged from 12 to 81, with most sites (13) reporting between 12 and 29 in attendance. The managers had worked at the CNSs an average of 6 years (range: >1 to 23 years).

Nutrition Education

The mean NER score across all sites ($n = 19$) was low at 7.9/12 (65.8%) (Table 3). The overall score for resource availability was somewhat low at 5.2/7 (73.7%), and the overall score for training/education resources was very low at 2.7/5 (54.7%). Of the subtopic areas, equipment had a high score of 0.9/1 (89.5%), but facilities had a somewhat low score of 4.3/6 (71.1%).

Table 3.

Mean Scores Indicating Nutrition Education Readiness Across All Sites ($n = 19$) Based on Responses to Items Included in the Readiness-to-Deliver Assessment (RDA) Instrument

Topic area	Subtopic area	RDA item	Maximum possible score	Mean score (SD)	Range (min–max)	Mean % score ^a	
Resource availability (7 items)			7	5.2 (1.7)	2–7	73.7	
	Facilities (6 items)	Kitchen available	1	0.9 (0.2)	0–1	94.7	
		Kitchen lock	1	0.5 (0.5)	0–1	52.6	
		Private room available	1	0.7 (0.5)	0–1	73.7	
		Hard floor in private room	1	0.7 (0.4)	0–1	73.7	
		No/thin baseboards in private room	1	0.5 (0.5)	0–1	52.6	
		Electrical outlet in private room	1	0.8 (0.4)	0–1	78.9	
	Equipment (1 item)			1	0.9 (0.3)	0–1	89.5
		Space available in refrigerator or freezer	1	0.9 (0.3)	0–1	89.5	
	Training/education resources (5 items)			5	2.7 (1.0)	1–4	54.7
Training in nutrition		1	0.3 (0.5)	0–1	31.6		
Access to nutrition education materials		1	0.9 (0.3)	0–1	89.5		
Written instructions or handouts provided		1	0.3 (0.5)	0–1	31.6		
Clarity and conciseness in instructions		1	0.3 (0.5)	0–1	26.3		

Confidence in ability to deliver nutrition education	1	0.9 (0.2)	0–1	94.7
Mean total ^b	12	7.9 (2.2)	4–10	65.8

^aMean % score was calculated by taking the average of all individual sites' ($n = 19$) mean % scores. Individual sites' mean % scores were calculated by dividing the number of points received for a category by the maximum number of points possible for that category and multiplying by 100. ^bThe mean total was calculated by averaging the total scores (out of 12 possible points) for each site ($n = 19$). It does not equal the exact sum of the item mean scores due to rounding.

General Education

The mean GER score was somewhat low at 15.8/22 (71.8%) (Table 4). The overall resource availability score was somewhat low at 12.7/16 (79.1%), and the overall service availability score was low at 2.6/4 (63.8%). However, the topic areas with the lowest scores were training/education resources at 0.3/1 (26.3%) and policy/administration at 0.3/1 (31.6%). Of the subtopic areas, facilities, equipment, and service utilization all received high scores (>85%), whereas the communications and workforce scores were both low, at 4.8/7 (69.2%) and 1.7/3 (56.1%), respectively.

Table 4.

Mean Scores Indicating General Education Readiness Across All Sites ($n = 19$) Based on Responses to Items Included in the Readiness-to-Deliver Assessment (RDA) Instrument

Topic area	Subtopic area	RDA item	Maximum possible score	Mean score (SD)	Range (min–max)	Mean % score ^a
Resource availability (16 items)			16	12.7 (2.7)	7.5–16	79.1
	Facilities (5 items)	Number of separate rooms	1	0.9 (0.2)	0.5–1	86.8
		Storage room available	1	0.9 (0.3)	0–1	89.5
		Storage room lock	1	0.9 (0.3)	0–1	89.5
		Main room darken	1	0.7 (0.5)	0–1	73.7
		Main room accommodate limited mobility	1	1 (0)	1–1	100
	Equipment (4 items)		4	3.4 (1.0)	0–4	85.5

	Functional TV available	1	0.9 (0.2)	0–1	94.7
	TV can be connected to a DVD player	1	0.9 (0.3)	0–1	89.5
	Functional DVD player available	1	0.7 (0.5)	0–1	68.4
	TV in main room or can be moved to main room	1	0.9 (0.3)	0–1	89.5
	Communications (7 items)	7	4.8 (1.8)	1–7	69.2
	Functioning landline phone	1	0.7 (0.5)	0–1	73.7
	Functioning cell phone	1	0.9 (0.3)	0–1	89.5
	Functioning computer	1	0.6 (0.5)	0–1	57.9
	Email or Internet	1	0.6 (0.5)	0–1	63.2
	Type of Internet service	1	0.6 (0.5)	0–1	63.2
	Website or web page	1	0.4 (0.5)	0–1	42.1
	Best and quickest way to contact manager	1	0.9 (0.2)	0–1	94.7
	Training/education resources (1 item)	1	0.3 (0.5)	0–1	26.3
	Training in adult education	1	0.3 (0.5)	0–1	26.3
	Service availability (4 items)	4	2.6 (0.6)	1.5–3.5	63.8
	Workforce (3 items)	3	1.7 (0.6)	1–3	56.1
	Managers	1	1 (0)	1–1	100
	Volunteer drivers	1	0.1 (0.2)	0–1	5.3
	Paid staff drivers	1	0.6 (0.5)	0–1	63.2
	Service utilization (1 item)	1	0.9 (0.2)	0.5–1	86.8
	Days open for dining	1	0.9 (0.2)	0.5–1	86.8
	Policy/administration (1 item)	1	0.3 (0.5)	0–1	31.6
	Adequate funds	1	0.3 (0.5)	0–1	31.6
	Mean total ^b	22	15.8 (3.2)	9–19.5	71.8

^aMean % score was calculated by taking the average of all individual sites' ($n = 19$) mean % scores. Individual sites' mean % scores were calculated by dividing the number of points received for a category by the maximum number of points possible for that category and multiplying by 100. ^bThe mean total was calculated by averaging the total scores (out of 22 possible points) for each site ($n = 19$). It might not equal the exact sum of the item mean scores due to rounding.

Discussion

Mean scores for NER and GER were low, suggesting that the sampled CNSs were not ready to deliver nutrition education. Specifically, four areas in CNSs were lacking: training/education resources, funds, drivers, and uniform, up-to-date communication technologies.

Training/Education Resources

Most managers lacked training in nutrition and adult education. Nutrition education was not emphasized in the provided job description, nor was training in nutrition and/or adult education a prerequisite for employment as a CNS manager. We recommend that managers who deliver nutrition education interventions must be familiar with nutrition concepts and have experience with, or at a minimum some training in, teaching older adults (Hosmer, Dwyer, & Villarroel, 1997). Additionally, most managers in our study reported a lack of clear, concise instructions to prepare them for delivering nutrition education. Minimal instructions coupled with varying levels of experience and training could negatively influence intervention effects.

Funds

Managers also reported that adequate funds for their CNSs were not available. According to data from the Appalachian AAA, in 2015 the average amount of funds allotted for provision of congregate meals and nutrition education at individual CNSs ranged from approximately \$25,000 to over \$60,000, depending on the number of meals served (C. Breeze, personal communication, March 14, 2016). In recent years, funding for senior programming per individual senior per year decreased from \$53.73 in 1993 to \$29.75 in 2015 (1993 amount adjusted to account for inflation) (The Center for Community Solutions, 2015). If adequate funding is not available beyond what is necessary for meal preparation and service, this could inhibit the ability of CNSs to purchase supplies necessary for an intervention.

Drivers

Drivers (paid or volunteer) were not available at all sites to transport participants to the CNSs. Although number of drivers is unlikely to influence the effect of an intervention, it does influence the numbers and types of people who can attend the CNS. According to the Surface Transportation Policy Project report published in 2004, many older adults in the United States (21%) were not able or willing to drive and so were less likely to participate in activities outside the home (Bailey, 2004). In rural settings, it is particularly important to provide transportation to CNSs as public transportation is likely not available.

Communication Technologies

Nearly half of all sites were lacking a functioning computer and/or email/Internet on-site, possibly due to lack of funding or lack of high-speed Internet service available in parts of the study area. Modern communication technologies could be considered an unnecessary luxury in the preparation and service of meals to older adults. However, email is a practical way to maintain regular contact with managers who are delivering education interventions. For instance, materials and instructions for how to deliver an intervention could be emailed to managers. In addition, intervention designers could regularly contact managers to answer questions. Of course, managers would need to agree to use email consistently. However, they would have this opportunity only if the technology were available.

Areas Indicating Readiness

Despite several areas in which CNSs were lacking, there were indications of readiness in some areas. These were availability of a kitchen, refrigerator/freezer space, presence of a manager, functioning cell phone, locked storage, functional TV with DVD player, and main room to accommodate persons with limited mobility. These items are commonly used for preparation and service of meals and other daily activities but could also benefit education intervention delivery. For example, having a kitchen with space available in the refrigerator could aid in preparing for, conducting, and cleaning up after cooking demonstrations. Only two of the items were present at every facility—a manager and a main room that accommodated persons with limited mobility.

Limitations

Because the sampled CNSs were only in the Appalachian region of South Carolina, findings cannot be generalized to all CNSs. Also, although interviews were used to design RDA instrument items in a way that was easy to understand, managers' responses were subject to their interpretations of the items. Due to the potential for change within the participant population, as well as among CNS staff, and the buildings used as CNSs, the readiness-to-deliver scores will continually change; thus, it will be necessary to periodically reevaluate readiness at each CNS.

Conclusion

Because environmental context can influence the effect of an intervention (Robertson, Jepson, Macvean, & Gray, 2016) efforts must be made to ensure maximum consistency of such contexts. Overall, the sampled CNSs were not ready to effectively deliver education interventions due to lack of training/education, funds, drivers, and communication technologies. There were some areas of strength on which the SCLGOA could build by making changes in the areas that were lacking, thereby improving the likelihood that nutrition education interventions at CNSs in the Appalachian region of South Carolina would be effective. On a broader scale, Extension educators across the United States can build on this research by using the readiness concepts described here to identify areas needing improvement within any delivery setting before launching an intervention. By so doing, educators might not only improve the effect of their interventions but also be better equipped to explain variations in effect across settings after their intervention is launched, thereby improving evaluation efforts. Further, upon request we can share the RDA instrument with Extension specialists or agents desiring to use it to determine needs within their regions.

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