USEFULNESS OF THE AUDIENCE RESPONSE SYSTEM IN TRAINING LAY HEALTH ADVISORS FOR CHRONIC DISEASE PREVENTION

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Abstract:

Lay health promoters (LHPs) have been successful in preventing disease. Given the complexity of health interventions, a crucial component that is necessary for LHPs' success is the training they receive. Engaging methods have the potential to increase LHPs' learning and efficacy to implement health interventions. The Audience Response System (ARS) has successfully facilitated interactive learning in several settings, but has not been used to train LHPs. This paper describes how the ARS was used in LHP training to implement a complex behavioral intervention, reports the training results, and serves as a model for others who work with LHPs.

Key Words: *Audience Response System, lay health advisor, community health worker, lay health promoters, training*

1.0 INTRODUCTION

Community members trained as lay health promoters have successfully addressed risk factors for chronic disease, including body weight(Kim, Linnan et al. 2008), cancer screening(Eng and Smith 1995; Erwin, Spatz et al. 1999), and nutrition(Elder, Ayala et al. 2005). Lay health promoters are identified by communities as individuals turned to for advice and support(Jackson and Parks 1997), and are more likely to convey information in a culturally sensitive manner(Eng, Hatch et al. 1985) because they are indigenous to the communities they serve. Through engaging their extensive preexisting social networks, lay health promoters can also change the cultural milieu of communities to promote positive health behaviors(Eng, Hatch et al. 1985). Given the complexity of chronic disease prevention and health promotion interventions, lay health promoters must be carefully trained to reliably implement crucial components expected to promote risk reduction behaviors(Jackson and Parks 1997). Interactive and engaging methods have the potential to increase learning and efficacy in lay health promoters to implement chronic disease and health promotion interventions.

The Audience Response System (ARS) is computer-based program that has been used to facilitate interactive learning between teachers and students(Mastoridis and Kladidis 2010; Thomas, Monturo et al. 2011; Vana, Silva et al. 2011); to solicit input from conference participants(Solecki, Cornelius et al. ; Solecki, Cornelius et al. 2010) and from community partners in participatory research projects(Patel, Koegel et al. 2006); and to collect evaluation data from research participants(Gamito, Burhansstipanov et al. 2005). The program administrator presents information and multiple-choice questions on a PowerPoint slide. Participants use an electronic key-pad to transmit their response to the computer program. The program displays anonymous, aggregate responses on a PowerPoint slide, providing the program administrator and the participants with immediate feedback. This feedback can allow the administrator to clarify material that was taught and provide a point for discussion(Mastoridis and Kladidis 2010). Using a key pad to submit an anonymous response encourages participants to answer the questions honestly without fear of embarrassment from answering incorrectly(Mastoridis and Kladidis 2010). ARS-based training has been shown to increase engagement between program administrators (teachers, researchers, presenters) and their audience (students, research participants, conference attendees)(Patel, Koegel et al. 2006; Mastoridis and Kladidis 2010; Solecki, Cornelius et al. 2010; Thomas, Monturo et al. 2011). Students and teachers endorse the ARS as an effective teaching tool(Thomas, Monturo et al. 2011), although the literature is mixed on whether the ARS increases test scores(Vana, Silva et al. 2011).

To the authors' knowledge, the ARS has not been used to train lay health promoters. This paper describes how the ARS was used to train lay health promoters to implement a culturally appropriate, behavioral intervention designed to prevent chronic disease through promoting healthy weight, healthy nutrition, and increased physical activity in African American adults. These methods serve as a model for others who wish to use the ARS as an interactive tool in

training lay health promoters for chronic disease prevention and health promotion.

2.0 METHODS

The ARS was used to train lay health promoters in a pilot study designed to demonstrate the feasibility of implementing a culturally appropriate, evidence-based behavioral weight management program known as The WORD (Yeary, Cornell et al. 2011). Obesity is a significant public health problem that disproportionately affects underserved groups. Within the U.S., African Americans (31.1% of blacks are obese compared to 19.6% of whites(Mokdad, Ford et al. 2003)) and Southern rural residents(2001) bear some of the highest burdens of the obesity epidemic. Obesity interventions targeting rural, African American groups are essential to address disparities in health.

The WORD adapted the Diabetes Prevention Program (DPP) for church-going African American adults in the rural South (Group 2002).The DPP was a multi-center clinical trial in 3234 overweight, diverse adults with prediabetes that tested different strategies to prevent diabetes. The lifestyle intervention group, which included behavioral changes in diet and physical activity, were found to be particularly effective in preventing diabetes. The lifestyle intervention also produced significant weight loss (Group 2002). Cultural adaptation of the DPP included presenting the intervention as a chronic disease prevention intervention designed to promote healthy weight, healthy nutrition, and increased physical activity.

Pastors of recruited churches were asked to recommend potential lay health promoters (WORD Leaders) from their congregations to lead the intervention sessions after completing the required study training. Qualifications for WORD Leaders included ability to travel and an interest in promoting health within a faith-based context. Lay health promoters attended five, 4-hour long training sessions (20-hours total training) addressing chronic disease risk factors (e.g. body weight, nutrition, physical activity), faith and health, and behavioral risk reduction strategies(Yeary, Cornell et al. 2011). Training materials described the role of lay health promoters, emphasizing the importance of providing social support through existing social networks. Training procedures included behavioral rehearsal to develop skills in group facilitation, leadership, communication, and health promotion strategies. Lay health promoters who scored at least 80% on a final exam covering the training material were certified to implement the evidence-based culturally adapted chronic disease prevention intervention. Certified lay health promoters implemented the intervention in three churches with weekly small group meetings conducted over approximately four months.

The ARS (using the software TurningPoint 2008) was used to facilitate an interactive training experience and to confirm the lay health promoters' understanding of crucial concepts. Training materials were presented in a series of learning modules, each consisting of 5-10 PowerPoint slides. After each learning module was presented, the lay health promoters completed a brief test assessing knowledge of concepts covered in the learning module. In completing the test, lay health promoters used electronic key pads to submit responses to multiple choice questions presented on PowerPoint slides. For example, in the healthy eating module, lay health promoters were expected to learn: healthy eating goals (eat

less fat, eat 2 ½ cups of vegetables/day, eat 1 ½ cups of fruit/day, eat half of all starches and grains as 100% whole grains); the rationale behind the goals; types of foods that are low in fat and high in fiber; and strategies to help participants meet the goals. Test questions assessed knowledge in each of these content areas. If the question was answered incorrectly by at least one lay health promoter, the trainer identified the correct answer, and asked the lay health promoters to explain why that response option was correct. If the question was answered incorrectly by the majority of lay health promoters, the trainer asked the trainees how the learning module failed in communicating the information, and reviewed the material with them to clarify the correct response.

In addition to assessing knowledge of training materials after each training module, an assessment was administered to lay health promoters after each of the first three training sessions. The assessment measured the lay health promoter's self-efficacy for implementing crucial components of the program, the perceived difficulty of intervention goals that would be assigned to study participants, confidence that program participants would be able to achieve intervention goals, in addition to knowledge of training materials. These questions were used to facilitate discussion intended to identify potential barriers to treatment implementation, increase efficacy for implementing the program, and enhance participant response to treatment.

After completing all the learning modules, the lay health promoters completed a final exam that consisted of 50 questions that were selected from the post-tests following each learning module. Additional questions assessed satisfaction with the training program and perceived helpfulness of the ARS as a training tool. Assessment questions included, "How helpful was using the Audience Response System (clickers)?", with response options 'Very helpful', 'Helpful', 'Not helpful', and 'Not at all helpful'; and "How satisfied were you with using the Audience Response System (clickers)?", with response options 'Very satisfied', 'Satisfied', 'Not satisfied', 'Not at all satisfied'. Efficacy questions asked the lay health promoters how confident they were in implementing various intervention components, with responses ranging from 'Not at all confident' to 'Completely confident.'

3.0 RESULTS

A total of 11 lay health promoters were recruited across the three participating churches. All the lay health promoters were adult African American women. Seven of the 11 lay health promoters completed the training by attending all the training sessions. All seven of the lay health promoters who completed training met the 80% exam criterion and were certified to implement the evidence-based, culturally adapted chronic disease prevention program.

Results of the post-tests are summarized in Table 1. On average, 88.8% of lay health promoters answered knowledge questions correctly, with 91.4%, 93.7%, and 81.2% of lay health promoters correctly answering questions from Training Sessions 1, 2, and 3, respectively. Consistent with this finding, most of the lay health promoters (77.8%) also were very confident that they would be able to implement the chronic disease prevention program. A substantial majority of lay health promoters (89%) perceived a program goal as difficult, but thought many people could achieve the program goal. More than half (62.5%)

were very confident that those participating in the weight management program would be able to meet an intervention goal.

All of the lay health promoters reported the highest possible levels of satisfaction and helpfulness with the ARS, reporting that they were 'very satisfied' with the Audience Response System and that the Audience Response System was 'very helpful'. Six out of seven lay health promoters reported that they were 'Very confident' or 'Completely confident' in their ability to deliver program components.

4.0 DISCUSSION

Uniformly high scores on post-test knowledge questions and consistent success on the certification exam suggest that the ARS can effectively be used to train lay health promoters to implement a complex, evidence based, culturally adapted behavioral weight intervention designed to promote healthy nutrition and increase physical activity in African American adults. Statistically significant improvements in nutrition, physical activity, and weight that were achieved in the pilot study(Yeary, Cornell et al. 2011) provide additional evidence that the training was effective. Positive ratings on the satisfaction and helpfulness questions indicate that the ARS-based training was well received by the lay health promoters and suggests that it may prove to be an effective way to maintain interest and enthusiasm in demanding training programs that are required to assure treatment fidelity when implementing complex, evidence-based behavior change programs. Consistent with this inference, 7 of 11 lay health promoters who started the training program attended all training sessions and passed the certification exam.

The ability to provide real time assessment and feedback may contribute to the effectiveness and acceptability of the ARS as a training tool. Post tests following each learning module made it possible to determine immediately whether concepts were learned and understood. Providing corrective feedback, when needed, would be expected to enhance retention of key concepts. As many lay health promoters are not accustomed to formal evaluation that is a routine component of research projects, this experience with the question content and format used in the certification exam also may help diminish evaluation anxiety and enhance performance. Immediate feedback on knowledge questions provided opportunities to engage lay health promoters who responded correctly as peer instructors, further demonstrating their mastery of a challenging intervention protocol. Feedback on efficacy questions and perceived difficulty questions provided opportunities for the lay health promoters to proactively identify potential challenges they may encounter when implementing the weight management program and collectively develop strategies to address identified challenges. This collaborative process typically established a group consensus reflecting self-efficacy for implementing challenging components of the chronic disease prevention program and increased confidence that participants would be able to achieve intervention goals.

While the results of the training program are very encouraging, the pilot study was not designed to systematically evaluate a training program using ARS. ARS was used to train lay health promoters from a very specific population, and the results of using ARS may differ when training lay health promoters from other populations. Positive outcomes argue

for the potential beneficial use of the ARS to train lay health promoters to implement complex behavior change interventions. Methods described in this manuscript serve as a model for training lay health promoters and identify key issues that should be systematically examined in subsequent studies specifically designed to evaluate the efficacy of ARS based training programs.

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Table 1. Lay health promoters Training Session Responses to Audience Response System Questions

	Training Session 1	Training Session 2	Training Session 3
Knowledge Questions			
Number of questions	14	7	25
Percentage of participants who answered questions correctly	91.4%	93.7%	81.2%
Perceived Program Difficulty			
Number of questions	2	0	0
Percentage of lay advisors who reported that a program goal was 'hard', but thought 'a few people' would be able to achieve the goal	5.5%	--	--
Percentage of lay advisors who reported that a program goal was 'hard', but thought 'many people' would be able to achieve the goal	89%	--	--
Percentage of lay advisors who reported that a program goal was 'an easy goal for many people to achieve'.	5.5%	--	--
Efficacy Questions			
Number of questions	0	1	4
Percentage of lay advisors who were 'somewhat confident' that they would be able to deliver an intervention task	--	22.2%	--
Percentage of lay advisors who were 'very confident' that they would be able to deliver an intervention task	--	77.8%	--
Percentage of lay advisors who were 'somewhat confident' that their group members would meet an intervention goal	--	--	37.5%
Percentage of lay advisors who were 'very confident' that their group members would meet an intervention goal	--	--	62.5%

