Overcoming Barriers: Using Technology and Behavioral Interventions to Improve Obesity Care in Rural Communities

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Purpose:

To explore the effectiveness of an Internet-delivered, intensive behavioral intervention for overweight and obese adults living in rural, or medically underserved communities.

Introduction:

Using available global obesity facts published in 2017, the World Health Organization (WHO) reports that in 2016, more than 1.9 billion adults were overweight, and of these over 650 million were obese. Overall, nearly 13% of the world's adult population was obese in 2016. This global surge in obesity prevalence has had a greater impact on many low- and middle-income countries who face health challenges related to undernutrition as well as diseases associated with increased obesity, such as diabetes and heart disease (WHO, 2017). The burden of obesity is worse for low-income, minority and rural-dwelling adults (Hill, You, & Zoellner, 2014). Previous studies have reported a higher prevalence of obesity among rural Americans (Trivedi, Liu, Probst, Merchant, Jhones, & Martin, 2015). A significant barrier identified for this population is access to quality health services and providers (Bolin & Bellamy, nd). Understanding that obesity is a multi-faceted constellation of causative factors, this interventional investigation utilized intensive behavioral therapy (IBT) along with current obesity practice guideline management strategies, to deliver the intervention using a distance learning technology-based platform. By addressing barriers to access in delivering an evidence-based intervention in rural community dwellers the researcher sought to compare outcomes of traditional face-to-face studies employing IBT, to an internet-delivered IBT intervention.

Methods:

A single arm, pre-post study design was selected to measure the effectiveness of the internet-delivered, IBT intervention (Thiese, 2014). While an RCT would enhance the generalizability of the study outcomes, cost coupled with rural provider preference restricted this option. Inclusion criteria included English speaking adults, age $\geq$18 and whose BMI was $\geq$25, and $\leq$40, and whose co-morbid conditions were considered well-controlled as determined by their primary care provider. Exclusion criteria included cognitive deficits that might interfere with their ability to participate fully in the study and physical limitations that hindered their ability to participate in sustained light-to-moderate aerobic activity five days per week. Measurements using the Health-Related Quality of Life-Short Form 36 (HRQL-SF) were taken at baseline and after completion of the intervention at 8-weeks.

Results:

To date, 143 of 170 (.84) participants have completed the intervention. Overall, participants reported satisfaction with the modules. Scores for quality, usefulness, ease of use, and look of the modules were consistently "good." Most participants spent 4 hours weekly or less working within the eight-week intervention program. Early indicators support modest improvement on pre- and post-BMI measure. The intervention results revealed that the average weight loss was 6.4±4.5 kg, resulting in a BMI reduction of 2.43±1.40 kg/m2. Scales on the HRQL-SF demonstrated improvements of 4–17%. Improvements in HRQL-SF was on average greater, with significant ($p<$.05) findings related to Role Limitation—Physical (P=0.076), Role Limitation—Emotional (P=0.012), Vitality (P=0.011), Mental Health (P=0.028) and Social Functioning (P=0.037). Surveys from participants convey a high degree of satisfaction with the course

(.87), and rural providers who referred patients to this project also report high satisfaction with the referral process and follow through on patient outcomes (.92). Exploratory outcome results must be interpreted with caution due to the small sample size with 170 participants at baseline and 143 at Week 8 (completers). Statistical significance was set at $p \leq .05$, while clinical significance was determined using criteria specific to the instruments. After completing the intervention, 73% of study participants reported that they were ''somewhat'' or ''significantly'' pleased with IBT as a method to assist them "manage their weight" successfully.

Conclusion:

Healthcare providers face unique challenges in managing chronic diseases, including obesity, in rural and medically-underserved communities across the globe. With improving access to technology-delivered health care across rural communities, specialty care is now available locally, thus reducing the travel burden for rural community dwellers to travel to distant healthcare sites. The central design of this intervention was the triad relationship between the client, local healthcare provider, and the distant site provider of the intervention. Findings indicate that some measures of access to quality specialty care were overcome. However, some barriers remain, including the intermittent availability of technology, low-speed broadband, or dial-up internet access. This resulted in the need for flexibility with the intervention content to minimize technology reliance of content delivery of some materials. Program success was also reliant on the professional relationship between the participants and their local healthcare provider. Local providers agreed to refer participants as well as provide necessary biophysical measurements to validate study outcomes. This design supports the potential for establishing collaborative community relationships between urban, or university-based providers and rural providers to mitigate barriers to effective obesity treatment. Lessons learned in this study may inform providers in other rural and medically underserved areas across the globe.

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Keywords:

Adult Obesity Prevalence, Distant Learning Technology Intervention and Rural and Underserved Communities

References:

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Abstract Summary:

This obesity intervention program explored the effectiveness of an Internet-delivered, intensive behavioral program for adults living in rural or medically underserved communities in the American Southwest. Using adult learning theory to design an intensive behavioral intervention has demonstrated effectiveness for adult rural community dwellers who are overweight or obese.

Content Outline:

LEARNING OBJECTIVES	EXPANDED CONTENT OUTLINE
Recall the WHO reported prevalence of Global Overweight & Obesity in 2016.	Participants will be shown via presentation the most recent published facts by the WHO of obesity prevalence. These facts will be presented within the context of comparing settings (urban vs. rural), wealth (affluent vs. non-affluent) to reflect the Global Health Pandemic of Obesity for participants.
Describe the U.S. Rural Healthy People 2020 health priorities, and common barriers to access of quality healthcare services in rural communities in the U.S.	Evidence from the Rural Healthy People 2020 report will be presented which identifies obesity, and related co-morbidities as being greater in rural vs. urban dwellers, and technological limitations related to health care access and quality services of rural communities in the US and across the globe.
Discuss the implementation and outcome measures of a university-based, technology delivered, intensive behavioral intervention program delivered in partnership with local primary care providers in rural and medically-underserved communities.	Findings from this study will be presented that will identify barriers, challenges, and successes to facilitating weight loss using distant learning technology to deliver an evidence-based intervention in rural and medically-underserved communities and its potential application to other like settings global communities.

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Professional Experience: I have been a practicing nurse for over three decades, and an advanced practice nurse since 2003. As a faculty member both my clinical research and advanced practice has focused on the care of the adult who is overweight or obese. Utilizing evidence-based guidelines, along with cognitive behavioral interventions we have been able to explore improved quality of life for this group of marginalized adults. With ongoing grant funding focused on the rural primary care provider and client, weare exploring technological advancements to improve health-related outcomes. 2014 - current; Associate Clinical Professor Northern Arizona University.

Author Summary: Dr. Sutton has been a practicing nurse since 1983, and a clinical researcher and professor since 2004. His primary research focus has been on the quality of life and psychophysiological impacts of obesity on the adult community dweller. He maintains a clinical practice as an adult nurse practitioner where he focuses on facilitating change to achieve health for persons who are obese.