

Review Article

Targeting Diet and Physical Activity: Reaching Homeless Adults through Customized Interventions

Shannon Allport Markus^{1*}, Marlyn Allicock², Michael S. Businelle³, Josh Yudkin⁴ and Darla Kendzor³

¹Department of Emergency Medicine, Vanderbilt University Medical Center, Nashville, USA

²Department of Health Promotion & Behavioral Sciences, Center for Health Promotion and Prevention Research, School of Public Health, University of Texas Houston, USA

³Department of Family and Preventive Medicine, University of Oklahoma Health Sciences Center, Oklahoma City, USA

⁴Department of Epidemiology, Human Genetics & Environmental Sciences, University of Texas School of Public Health, Houston, USA

Key Points About What is Known:

- Homelessness is a risk factor for both acute and chronic disease; homeless populations experience an age-adjusted mortality rate 3-4 times greater than the general population.
- Poor diet and insufficient physical activity are linked with cancer and cardiovascular disease; these conditions are associated with high homelessness mortality rates.
- Improving both physical activity and vegetable and fruit consumption has substantial beneficial effects on overall health, including the prevention of cancer, cardiovascular disease, and premature death.
- No published research exists on diet/physical activity interventions in homeless adults to date.

Key Points about What is Not Known:

- There are few studies looking at behavioral health interventions in homeless adults; therefore, there are no best practices available for this population.
- Additional research is required to assess the effectiveness of technology (relative to other services shelters provide) in eliminating homelessness.
- It is critical to develop operational and process-driven improvements that would enable and empower homeless adults both to have access to and to save food.
- Future research should assess health literacy and identify the best mediums by which to transmit information and empower homeless adults to lead healthier lives.

ABSTRACT

Over six percent of the American population experience homelessness in their lifetime, and poor health is commonplace among individuals experiencing this condition. Homelessness is a risk factor for both acute and chronic diseases; homeless populations experience an age-adjusted mortality rate 3-4 times greater than the general population. In fact, despite the high prevalence of poor health behaviors and the well-documented disparities in health care outcomes among homeless adults, interventions for this population are scarce, likely due to the fact that they are challenging to implement. Consequently, there are few published interventions on diet/physical activity interventions targeting this population to date. Health-e-Strides, a novel randomized pilot lifestyle intervention for 32 transitional shelter residents, took place at The Bridge in Dallas, Texas. This paper reports on the lessons learned and approaches for intervening in this vulnerable population.

Participants were randomized into either the experimental arm or control arm of the study. The experimental arm included

a 4-week shelter-based diet, physical activity intervention, tailored educational newsletters, and supplemental fruits and vegetables; the control arm was not given any additional resources and compensated for completing assessments at the conclusion of the study. 71% of participants reported that the intervention was “extremely/very helpful” for both increasing daily intake of fruits and vegetables and for increasing physical activity.

Based on this intervention, this paper discusses barriers and facilitators for lifestyle improvements among homeless adults. This intervention demonstrated the effectiveness of customized lifestyle interventions in improving health care outcomes for homeless adults and affirms the need for more research and innovation on this vulnerable population, especially in terms of long-term and sustainable solutions.

Keywords: Nutritional surveys; Diet food and nutrition; Health behavior; Indigents; Populations; Underserved; Physical activity; Health services needs

Introduction

In the United States, approximately 2.5 million people experience homelessness annually, with over 6.2% experiencing homelessness in their lifetime [1]. Homelessness is a risk factor for both acute and chronic disease, with cancer and heart disease as leading causes of death among homeless adults ≥ 45 years of age [1-3]. Overall, homeless adults experience an age-adjusted mortality rate 3-4 times greater than the general population, with an average age of death ranging from 42 to 52 years [4,5]. Poor diet and insufficient physical activity are strongly linked with cancer and cardiovascular disease [6-8]. Studies indicate that homeless adults consume nutritionally inadequate diet and are insufficiently physically active [1,4,9-12]. Adequate physical activity and fruit and vegetable consumption are known to have substantial beneficial effects on overall health, including prevention of cardiovascular disease, diabetes, cancer, obesity, and premature death [13,14].

Despite the high prevalence of poor health behaviors among homeless adults, there have been no published studies of diet and/or physical activity interventions in this population [15,16]. Thus, the current report describes the conceptualization of a theory-based intervention, Health-e-Strides, a recently published intervention that promoted fruit and vegetable consumption and daily physical activity among sheltered homeless adults [17]. We discuss the rationale for specific intervention strategies and barriers to intervention implementation and behavior change we encountered. Finally, we present lessons learned with the hope of informing continued work with this extremely vulnerable population.

Unique challenges

Health interventions for homeless adults have historically been understudied and underfunded, prolonging profound disparities in health care outcomes [18]. Although a variety of organizations work to improve the plight of homeless individuals, they primarily focus on mental health and emergency medical care, with substantially less attention paid to health behaviors including smoking, diet, and physical activity [19]. Often, health behaviors are perceived as low priority issues, despite the fact that tobacco use, poor diet, and obesity are among the leading causes of preventable morbidity and mortality in this population [20,21]. A change in the culture of inattention to health behaviors is needed to eliminate these health disparities.

Studying this population is not without difficulties - it is intrinsically challenging to engage people experiencing homelessness due to transience and disengagement with social services. Although there has been some preliminary evaluation of dietary and physical activity interventions for sheltered homeless children, no published research has evaluated these interventions in homeless adults. A survey of 9 shelters and soup kitchens found that while only one shelter provided nutritional education, most reported that guests preferred healthier food options [22,11]. Our preliminary work indicated that homeless adults desire diet and physical activity health promotion programs [16].

What we did

We conducted a randomized pilot study, Health-e-Strides, at The Bridge in Dallas, Texas, where over 3,100 individuals experience homelessness on a given night [17,15]. The mission of the Bridge is to end long-term homelessness by delivering services for emergency shelter, health care, education, and housing. The Bridge provides shelter for over 1,200 people daily and intensive care management, income, and housing services for over 1,800 people annually. Our previously established relationship at The Bridge provided a mutual sense of familiarity with the organizational structure and needs of the population [16].

We recruited 32 transitional shelter residents to participate in Health-e-Strides. Eligible participants received either 1) a 4-week shelter-based diet and physical activity intervention, which offered tailored educational newsletters, twice daily fresh fruits and vegetables during weekdays, and pedometers with a 10,000-step daily goal, or 2) paid assessments only (intervention offered at study conclusion). Using an already validated tool, all participants were asked to complete weekly assessments of diet, physical activity, stress, readiness to change, and dietary knowledge, and all were issued accelerometers to objectively measure physical activity. Participants received \$20 or \$30 per weekly visit. The primary study outcomes are described elsewhere [17].

Intervention participants received a personalized, technology-based health intervention, delivered as newsletters (Figure 1a-d). Ecological models and social cognitive theory suggest interventions that emphasize both interpersonal factors (e.g., nutrition knowledge) and environmental factors (e.g., availability of nutritious foods) can impact behavior [23]. Accordingly, weekly newsletters were tailored to individual participants based on demographic, psychosocial, behavioral, and community resource information. Strategies for healthy food selection and testimonials (tailored to gender) from other shelter residents who improved their health behaviors provided relatable strategies to model positive healthy behavior. Additionally, newsletters included meal-planning examples, an advice column using a "Dear Abby" format in which an expert dietician answered questions tailored to participant-selected barriers, behavioral feedback (current behavior compared to recommendations), a stage-of-change-based action plan offering specific steps tailored to participants' readiness to change, and information on social support for improving diet and physical activity.

Main outcomes included the number of servings of fruit and vegetables consumed daily and physical activity. At study follow-up, most participants reported that the intervention was extremely/very helpful (70.6%) for increasing daily intake of fruits and vegetables and extremely/very (70.6%) helpful for increasing physical activity [17].

Throughout study development and implementation, we encountered challenges that deserve discussion, including unstable housing, lack of resources, and barriers to acquiring and storing produce. Given the paucity of homeless health interventions, we detail how these challenges were addressed.

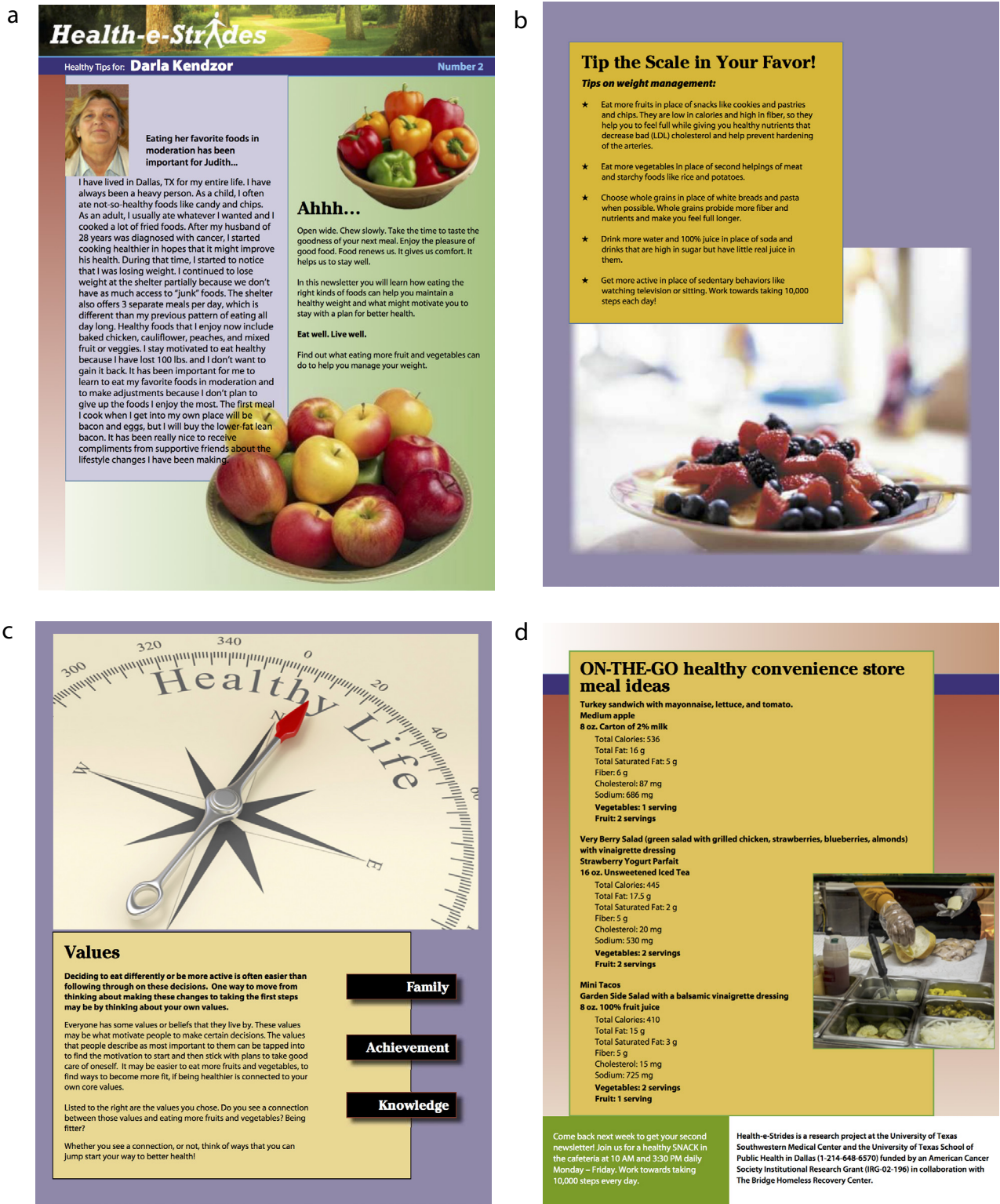


Figure 1: Example of weekly educational newsletter tailored to individual participants based on demographic, psychosocial, behavioral, and community resource information.

Addressing the barriers

Unstable housing: Each night, many shelters, including the Bridge, must turn people away secondary to capacity constraints, resulting in persons being inconsistently sheltered at a variety of locations. Consequently, it can become logistically difficult to follow transient residents over time. However, different levels of stability within homeless populations exist - from living on the street

to shelters or transitional housing - which can impact intervention implementation. To address this, we enrolled participants housed in The Bridge’s Transitional Shelter. Residents must return nightly by evening curfew for 4 weeks to become eligible for transitional shelter residency, where they reside in semi-private rooms while staff secure permanent housing. Many have jobs and are stable relative to individuals utilizing shelter services irregularly, allowing us to follow participants over time.

Funding, resources, and information: Lack of funding and resources further complicates implementing effective strategies for improving homeless health. The Bridge receives public funding but relies heavily on donations by private entities to fund services [24]. Though the homeless population is declining nationwide, shelters sometimes struggle to provide basic needs for their clients, including food and enough shelter space for all who arrive [25]. Pressure to provide essential services often precludes the possibility of maintaining ancillary, yet critical, health and social services. For example, while the information needs of homeless individuals range from housing and job information to health education, homeless individuals are negatively affected by limited internet access [26,27]. While other shelter services are often prioritized above technology access, technology in shelters can empower clients to take advantage of web-based health education services.

For Health-e-Strides, we provided access to 7 computers and a printer that were transported to the shelter for sessions, and the Bridge provided internet connections. Limited study funding did not cover the cost of new computers for the shelter; however, the investigators intend to seek funding for computers in future grant applications, which will serve as a resource beyond the study period.

Individualized health recommendations: Services that consider individual circumstances are viewed more favorably by homeless individuals, and self-management interventions using tailored approaches are effective for improving diet and physical activity [28-30]. Tailored newsletters, based on a previously developed and empirically supported intervention, were generated for each participant to avoid the “one-size-fits-all” approach. Newsletters were geared towards increasing self-efficacy [31]. To ensure intervention fit, the letters were further tailored to provided local resources and appropriate visuals.

Providing fresh fruit and vegetables: Shelter rules aimed at maintaining a safe environment also impacted our study. Direct provision of produce was convenient because there was no cost to participants and food preparation was not required. This was crucial given that residents did not have access to cooking facilities. However, working within the shelter’s preexisting meal schedule created a challenge for produce distribution. Because food was permitted only in the cafeteria, participants were unable to save their food, and those who could not attend scheduled distributions (who worked or were otherwise away) were unable to access the fresh produce offering. This may explain low snack time attendance (around 25% of possible snacks were dispensed). Despite this, snack times involved pleasant interaction with participants and may offer opportunities to engage and educate shelter residents in future studies.

Opportunities for intervening

Health is frequently accorded a low priority when there is housing instability. Though there appears to be high motivation and interest in adopting positive health behaviors among homeless adults, interventions are not usually available. Next, we identify unique opportunities and considerations for intervening [16].

First, access to technology can assist with job acquisition, life-skills development, and health-related services, including diet and nutrition education [26,32,33]. These immediate and substantial benefits for shelter residents argue for ways to leverage technology-based interventions for health promotion. For shelters with existing technology resources, such as internet and public computers, there is potential to initiate and sustain the dissemination of technology-based interventions.

Second, individual limitations to understanding information, including low health literacy, are important considerations in creating effective interventions. Intervention materials can be disseminated in various formats, including written and audiovisual, to address different learning styles.

Third, consider optimal timing for interactions. Our intervention worked around the established shelter schedule. Though attending scheduled snack times was not possible for some, they provided an opportunity to engage with residents. Future interventions may collaborate with shelters to provide healthy snacks in a flexible manner (e.g., distributions over a wider time period or outside of the cafeteria) to maximize resident participation.

Fourth, think creatively about how to increase access to healthy meals. A noteworthy barrier for sheltered individuals to improve their diet is the lack of personal food storage (e.g., pantry, refrigerator) or cooking area. This severely limits individuals’ ability to store their own food, significantly diminishing options in diet selection. Shelters could consider offering opportunities to cook and store purchased food to improve dietary quality as residents transition to independent living. It is important to note that 54.8% of Bridge residents receive SNAP benefits.

Shelter operations also create potential opportunities to intervene, especially as individuals must return by curfew and thus have unscheduled evening hours, during which several participants anecdotally reported inactivity and feelings of boredom. Shelter curfews provide interested audiences that may be engaged repeatedly, including those not in the transitional shelter. Therefore, there is potential for delivering educational programming (e.g. fitness or cooking classes) compatible with existing shelter schedules. On-site gym equipment could also be a valuable resource for residents.

Conclusion

There are many effective interventions aimed at improving the health of the general population. However, individuals experiencing homelessness are part of a socially and politically disenfranchised population and do not always benefit from existing services designed for broader populations. In the Health-e-Strides intervention, we focused on direct, personalized care to improve lifestyle behaviors. We adapted our methods to reach homeless adults by delivering the intervention at an established shelter and augmented health behaviors by incorporating the intervention into the shelter’s existing infrastructure.

Looking forward

Recently, the U.S. Interagency Council on Homelessness

allocated a budget dedicated to social welfare programs, aiming to end chronic homelessness by 2017 [34]. Despite funding for hospital services and support for substance abuse and mental illness, modifiable risk factors such as diet and physical inactivity received no mention 2017 [35]. The development of innovative methods for reaching marginalized homeless communities is necessary to address these traditionally neglected health behaviors. This requires a shift in the culture of care and developing effective interventions for prevalent and modifiable risk factors.

Participant transience, lack of resources, and logistical obstacles should be anticipated and accommodated in planning for homeless health interventions. The desire of homeless individuals to improve health behaviors provides an excellent opportunity to intervene. Future research should explore long-term solutions that span many sectors - not limited to health organizations, shelters, and housing organizations - to provide continuity of services. These interventions require special consideration for unique barriers to healthy lifestyles, and the ethical principles of beneficence and justice demand that we challenge the status quo and afford a group that constitutes one of the most vulnerable segments of our society the opportunity to adopt health-promoting behaviors.

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ADDRESS OF CORRESPONDENCE: Shannon Allport Markus, M.D., M.P.H, Department of Emergency Medicine, Vanderbilt University Medical Center, Nashville, TN, 1313 21st Avenue South, 703 Oxford House, Nashville, Tel: 37232-4700, E-mail: shannonamarkus@gmail.com

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