Targeting the Home Environment May Help with Weight Control


Study Overview

Objective. To assess the effectiveness of an intervention that focused on the home environment to reduce energy intake and increase physical activity among overweight and obese women.

Design. Randomized controlled trial.

Setting and participants. Study participants were overweight and obese females recruited via their providers from 3 community health centers (9 clinical sites) in southwest Georgia. Only women were recruited because of their potential role as gatekeepers of the home environment. Inclusion criteria included being aged 35 to 65 years at baseline, living with at least one other person, and living no further than 30 miles from the referring clinic. Exclusion criteria included patients with conditions that could impact their ability to be physically active and pregnant women.

Intervention. Participants in the intervention arm received 3 home visits and 4 coaching calls over 16 weeks. Core elements of the intervention were informed by social-cognitive theory and included a tailored home environment profile, goal setting, behavioral contracting for 6 healthy actions, and supportive materials delivered via mail. Home visits and coaching calls were completed by health coaches with at least high-school education and experience in social or customer service who had completed 2 days of formal training by university staff. Control condition patients received 3 mailings of educational booklets at 6-week intervals that included government documents encouraging adoption of US dietary and physical activity guidelines. All participants completed baseline, 6- and 12-month follow-up telephone interviews and wore an accelerometer at baseline and 6-month follow-up. Intervention patients also received follow-up surveys assessing satisfaction with the coach, home visits, telephone calls, and support materials.

Main outcome measures. The main outcomes were energy intake (average daily kilocalories from two 24-hour dietary recalls) and physical activity (hours per week spent in moderate or vigorous physical activity using the 7-day physical activity recall). Self-reported height and weight was used to calculate body mass index (BMI). Secondary outcome measures included self-reported weight loss and aspects of the home environment. Home food environment was assessed by asking participants about the presence of 3 unhealthy drinks and 8 unhealthy foods and snacks in the home in the past week, if fruits and vegetables and high-calorie snack foods were kept...
in easy to see and reach places in the home, how often
the family ate meals and snacks in front of the TV, how
often participants served healthier food or prepared foods
using healthy cooking methods, and asking the number
of days family meals were purchased from outside the
home. Home activity environment was assessed by asking
about rules regarding limits on time spent watching TV,
using a computer, playing video games, and using other
hand-held devices. The authors adapted a 14-item inven-
tory to assess personal exercise equipment accessibility
and availability in the home. Community facility use was
assessed with 9 survey items that assessed frequency of
use and spaces for exercise in the participants’ neighbor-
hoods.

Main results. A total of 948 patients were referred,
of which 751 were reached by phone and assessed
for eligibility. 81 did not meet inclusion criteria, 203
decided to participate, and 118 did not complete base-
line data collection, leaving 349 participants. Of these,
177 were randomized to the control group, 172 to the
intervention, and 21 dropped out. The majority of par-
ticipants were African-American women (84.8%) with an
average age of 50.2 years (SD = 8.1) and average BMI
of 38.3kg/m² (SD = 8.4). Most were low income, with
68.7% reporting an annual household income under
$25,000, and nearly 50% reported fair or poor general
health. Roughly 45% were employed and 49% lived in a
rural area. At 6 months, 82.5% of participants completed
data collection (n = 288); at 12 months, 76.8% com-
pleted data collection (n = 268). Participants who did
not complete follow-up through 12 months were either
non-responders (6 months: n = 36, 12 months: n = 44),
refused (6 months: n = 36, 12 months: n = 44), or died
(6 months: n = 0, 12 months: n = 1).

Daily energy consumption significantly decreased in
the intervention group compared to the control group at
6 months (–274 vs. –69 kcal/day, P = 0.003), however
there was no meaningful change in self-reported moder-
ate to vigorous physical activity nor was there significant
change in physical activity measured by accelerometers
at 6 months compared to baseline. For secondary out-
comes, self-reported weight loss at 6 months was signifi-
cantly higher among intervention patients (mean, –9.1 lb)
comparing to control patients (mean, –5.0 pounds)
(SD = 13.7 pounds; P = 0.03). In addition, at 12 months,
82.6% of intervention patients had not gained weight
compared with 71.4% of control patients (P = 0.03).

Intervention patients made several changes to their home
food environments compared to control patients. Inter-
vention patients had reduced the number of unhealthy
drink and snacks, increased purchasing of fruits and vege-
tables, and reduced the frequency of watching TV while
eating. In addition, they also improved meal preparation
and service and reduced the number of non-home meals
eaten. For home activity environment, having exercise
equipment in a visible location changed significantly
more in the intervention group compared to the control
group. Intervention patients also incorporated more
physical activity into their daily lives compared to control
patients, and created more exercise space in their homes
and yards. There were no significant differences in screen
time rules, use of community facilities and spaces, and
family social support for physical activity.

Conclusion. A moderate-intensity, coach-delivered
weight gain prevention intervention targeting the home
environment led to reduced energy intake and improved
home environments to better facilitate healthy living and
weight loss.

Commentary

More than half of all US adults are considered overweight
or obese [1]. Changing health behaviors has the best
potential for decreasing morbidity and mortality and for
improving quality of life and this has been supported
by the literature in a wide variety of behaviors including
smoking cessation and weight loss [2–4]. Currently, most
overweight and obese patients are treated through pri-
mary care provider–based (PCP) counseling or referral to
clinic-based weight management interventions. However,
barriers to PCP weight management counseling include
physicians’ negative attitudes towards the personal
attributes of individuals with weight management issues,
lack of time, and poor nutrition counseling competency
[5–7]. In addition, there are notable differences between
providers’ and patients’ beliefs about weight and weight
loss; providers tend to believe patients lack self-control,
while patients largely feel they should manage their
weight problems on their own and that counseling from
a provider is unhelpful [8]. Many patients report feeling
judged by their doctor because of their weight, and very
few of those who feel judged and discuss weight loss
options actually lose a clinically significant amount of
weight [9]. Considering the many barriers to providing/
receiving weight management counseling in the clinic
setting, weight management techniques provided outside the doctor’s office may be a more effective and feasible alternative.

The most common causes of death are related to lifestyle behaviors such as poor dietary habits and inactivity [10]. Since most calories are consumed within the home [11] and the average person spends the majority of their time in the home [12], interventions that target home-life behaviors are needed to combat weight gain. The Kegler et al study suggests that a moderate-intensity intervention targeted at changing home eating and exercise behaviors will be effective in changing home environments and reducing energy intake. While the authors had a fairly specific population, these findings suggest that interventions that specifically target health behaviors at home may have more potential for success than merely educating patients on the benefits of a healthy lifestyle.

This study has several strengths including the randomized controlled trial design, the intention-to-treat analysis, and low attrition rates. In addition, the intervention achieved reduced energy intake and improved health behaviors in the home, supporting significant weight loss among intervention participants, especially compared to control patients. Both of these suggest high adherence to the intervention, which is a complex but crucial component of successful weight loss and weight management [13]. Finally, the inclusion of a wide variety of secondary outcomes helped to distinguish between specific home environment changes to discern which aspects of the intervention were most successful. A limitation of the study was that the population was nearly entirely African American and from clinics in rural Georgia, which limits generalizability. However, the success of the intervention in this population is critical, as African American adults are nearly 1.5 times more likely to be obese compared to white adults, and greater than 75% of African Americans are overweight or obese [14]. Additionally, while the study did have significant success with energy intake and eating habits, the intervention was less successful with changing physical activity habits, and physical activity and exercise training can significantly impact weight loss and maintenance [15]. A final limitation is the use of self-reported weight and behaviors, which can reduce reliability of these results.

Applications for Clinical Practice

This study suggests that interventions that target health behaviors in the home may achieve better energy intake and physical activity outcomes and improve weight loss compared to traditional educational counseling. Providers may want to consider brief counseling around improving the home environment as opposed to or in addition to counseling around improving nutrition or physical activity. More research is necessary to understand whether this type of intervention is feasible and acceptable in other populations (eg, urban, other races). In addition, further research is necessary to improve the physical activity component of the intervention. The use of non-clinical providers has been shown to be effective in improving health outcomes [16] and this study provides further evidence on the impactful role that trained community residents can have on changing behaviors. These initiatives are vital to supplement weight loss and management efforts occurring in the clinical setting.

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References

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