The MOVE!® Program: Evidence-Based Interventions to Decrease Overweight and Obesity Translated Into Practice

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As seen in prior evidence-based randomized controlled trials, the current study found clinical relevance for the MOVE!® weight management and prevention program as a "real-world" practice intervention.

The U.S. overweight and obesity rates have reached epidemic proportions over the past few decades and present a significant threat to population health with a comorbid disease risk including type 2 diabetes, heart disease, hypertension (HTN), dyslipidemia, and stroke.[1-6] The National Health Examination Survey (NHES) (1960-1962) and the National Health and Nutrition Examination Survey (NHANES) (2005-2006) show the steepest rise in obesity and extreme obesity rates occurred in the 1980s through 1990s, resulting in an epidemic incidence and a continued problematic upward trend. NHANES reports an incidence for U.S. adults of 67.4% (32.2% overweight (body mass index [BMI] > 25.0 mg/k^2 - < 30.0 mg/k^2); 35.1% obese (BMI > 30.0 mg/k^2); and 6.2% morbidly obese (BMI > 40.0 mg/k^2).[7] By 2030, 86% of Americans are estimated to be overweight with 51% of Americans estimated to be classified as obese. By 2048, all U.S. adults are predicted to be overweight or obese.[2] U.S. veterans are not exempt, with trends suggesting that the overweight and obesity incidence is even greater for the veteran population compared with the general population.[7-9]

Population trends show premature death for overweight and obese individuals by all causes is attributed to even modest weight gain, particularly for adults aged 30 to 64 years. Having a BMI > 30 mg/k^2 holds a 50% to 100% increased risk (increasing as BMI increases) over those individuals of healthy weight.[4,6] This risk threatens to undo prior gains made by public health officials to reduce correlated chronic disease morbidity and mortality (eg, heart disease, diabetes, stroke) as rates continue to climb.[6] Health care expenditures fare no better. For example, one of the most highly correlated obesity-related diseases, type 2 diabetes, in 2007 was estimated to cost $174 billion in the U.S. Current trends raise concerns that the disease will soon overwhelm our current health care system.[4,5]

FROM EVIDENCE-BASED TRIALS TO PRACTICE TRANSLATION

Trends in the U.S. population obesity rates and lifestyle habits show poor diet and lack of exercise account for a majority of preventable overweight and obesity risk incidence.[4,6] Interventions addressing lifestyle modification including education and behavior modification and adoption of healthy diet and exercise habits, resulting in weight losses of 5% to 10%, have been found to significantly reduce obesity comorbidities in evidence-based randomized controlled trials (RCTs).[10-15] RCTs by

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Table 1. Study theoretical framework

RE-AIM	Dimension	Level
Reach	Proportion of the target population that participated in the intervention	Individual
Efficacy	Success rate if implemented as in guidelines; defined as positive outcomes minus negative outcomes	Individual
Adoption	Proportion of settings, practices, and plans that will adopt this intervention	Organization
Implementation	Extent to which the intervention is implemented as intended in the real world	Organization
Maintenance	Extent to which a program is sustained over time	Individual and organization

definition are controlled for many aspects concerning the population sample, including levels of lifestyle modification participation, to determine significant outcomes (efficacy). However, in real-world practice applications, most providers' pool of patients does not represent, nor do the settings fit, the same controlled conditions. The true question is—Do evidence-based RCTs E*fficacy* findings translate into everyday practice application E*ffectiveness*?[16,17] Unfortunately, practice effectiveness studies are lacking.

In response to the obesity problem, in 2001, VHA providers identified weight management parameters, based primarily on the National Institutes of Health overweight and obesity clinical guidelines, as a priority preventive need.[18] Design and development of an evidence-based, multidisciplinary, weight management program by the VHA's National Center for Health Promotion and Disease Prevention (NCP) was underway by 2002. A feasibility pilot study for the NCP MOVE! (Managing Overweight/Obese Veterans Everywhere) program concluded in December 2004. By 2008, nearly 99% of VHA facilities had a MOVE! related program.[19] This integrated program gives opportunity for further needed practice effectiveness research.

The current study evaluated the effectiveness of RCT lifestyle behavior modification interventions (healthy diet and increased activity/exercise) to decrease overweight/obesity and specific obesity-related disease burden for U.S. veterans participating in the MOVE! program at a Veterans Administration Medical Center (VAMC) in Kansas. The study objective was to examine the group effect (intervention and control groups) for obesity trends and specific obesity-related comorbid diseases. Hypertension, type 2 diabetes, and dyslipidemia were evaluated by biologic measures of blood pressure (BP) and laboratory testing, including hemoglobin A1C (A1C), alanine aminotransferase (ALT), and lipid levels. It was hypothesized that a difference in BMI at 6 months may be significant for maintenance of weight loss or lack of significant long-term weight gain for the MOVE! intervention group compared with the control group. A trend difference was expected for decreased BP, pertinent lipids (with the exception of high-density lipoprotein choloesterol (HDL-C), which was expected to stabilize or rise), and stabilized A1C and ALT levels for the MOVE! intervention group over a 6-month period and longer compared with the control group.

METHODS

This retrospective, descriptive study design used the VHA Computerized Patient Record System as the data collection source. A convenience sample of referred veterans participating in the MOVE! program (intervention group) was compared with the non-MOVE! (control) group who declined participation during fiscal years (FY) 2007 to 2009. Existing biologic measures for BMI (kg/m^2), systolic blood pressure (SBP[mm/Hg]), diastolic blood pressure (DBP[mm/Hg]), total cholesterol (TC [mg/dL]), triglycerides (TGs [mg/dL]), HDL-C [mg/dL]), A1C (%), and ALT (U/L) levels were collected at baseline, month 6, year 1, and year 2 time points. Baseline data with at least 60% of the total needed biologic measures data were inclusion parameters to protect validity of analysis by reducing the number of missing data. Overall, complete data sets of 81.61% for the non-MOVE! group and 85.88% for the MOVE! group were found. Demographic data for age, ethnicity/race, and gender were additionally obtained for insight into sample sociodemographics.

A minimum attendance of 2 qualifying intervention sessions was set for MOVE! participant study inclusion. The baseline time point was

Table 2. Baseline characteristics by group

	MOVE! Intervention group (N = 133)	Non-MOVE! Control group (N = 133)
Age (y)	57.49 ± 8.20	54.24 ± 10.25
Gender		
Male	110	122
Female	23	11
Race		
White	106	113
Black/African American	17	8
Hispanic/Latino	1	4
American Indian/Alaskan Native	4	5
Declined	5	3

the date of the first MOVE! intervention session. Parameters were limited to the assessment and assisted self-care and group session attendees (MOVE! 101 [group introductory course lasting 1 hour, consisting of instruction on dietary modalities from a registered dietician; behavioral modifications from a licensed social worker; and exercise modalities by an occupational therapy assistant] and MOVE! 2 [3 consecutive weekly, 2-hour group-education sessions, consisting of dietary modalities from a registered dietician; behavioral modifications from a licensed social worker; and exercise modalities by an occupational therapy assistant]), as implemented by this VAMC facility. Inclusion criteria for the non-MOVE! control group was nonattendance of MOVE! intervention sessions. The baseline time point was the date of declined referral to the MOVE! program. Standard primary care medical management was assumed for both groups.

MOVE! screening typically occurred at the time of a VHA primary care or specialist visit (eg, physician, advanced practice registered nurse, physician assistant, or psychologist) with referral for qualified veterans.[20] As consistent with screening parameters, exclusions included those unlikely to benefit, likely to be harmed, or patient's status limits participation, such as active cancer/treatments (other than nonmelanoma skin cancer); end-stage chronic obstructive pulmonary disease, congestive heart failure, renal disease, or neurologic disorders (eg, Parkinson disease, amyotrophic lateral sclerosis, multiple sclerosis); long-term care facility residents; moderate-to-severe cognitive impairment (dementia, poststroke); active psychoses or substance abuse; acquired immune deficiency syndrome; or anorexia. Additional participation limiters and conditions known to lend bias to the study biologic measures (verified by ICD-9 codes and verifying progress notes) were also excluded during sample selection: Those with acute/chronic pancreatitis and acute/chronic non-obesity-related liver disease (eg, hepatitis A, B, and C; alcoholic/chemical /idiopathic-induced disease or cirrhosis); those with known, documented chronic/long-term intermittent steroid treatment; patient's status or disease cause not otherwise specified (eg, poststroke physical deficit residuals, accident-induced paralysis) that significantly impair mobility and limits participation in physical activity; those with any stage of terminal illness by any cause. Exclusion criteria were carried across the 2-year study time frame. Those subjects who discontinued VHA services at the focus location (to include deaths) prior to completion of the 2-year study time frame were also excluded.

The Reach, Efficacy, Adoption, Implementation, Maintenance (RE-AIM) framework (Table 1) provided the study structure.[16] The RE portion of the framework defines the impact of an intervention as the product of its Reach (number found rather than percent of intended population is used here as total numbers could not be verified) and its Efficacy (RCTs outcomes—internal validity) or Effectiveness (translated practice/population dissemination study outcomes—external validity) ($I = R \times E$). The AIM portion additionally evaluates organization application: Adoption, Implementation, and Maintenance (also at individual level). RE-AIM can be applied in a variety of ways to fit the setting; not all 5 dimensions will be necessary for every study. Evaluation of the organization/institutional (VHA) level aspects is not relevant for the current study parameters. The 3 dimensions, R (*Reach*), E (*Effect/Effectiveness*), and M (*Maintenance*) portions (individual

Table 3. Biologic measures by time points

Group	MOVE! Intervention group (N = 133)				Non-MOVE Control group (N = 133)			
Time frame measurement	1	2	3	4	1	2	3	4
BMI (kg/m^2)[a]	37.19	36.65	36.58	36.68	33.73	34.35	34.20	34.49
BMI (kg/m^2)[b]	36.13	35.37	35.27	35.57	32.60	33.22	33.05	33.80
BMI[a] Lg	1.565	1.558	1.557	1.558	1.523	1.530	1.528	1.532
SBP (mm/Hg)[a]	129.14	125.44	125.54	125.25	126.59	126.30	127.23	126.71
DBP (mm/Hg)[a]	76.19	75.12	75.21	75.16	79.42	76.94	77.05	76.88
TC (mg/dL)[a]	173.01	162.59	167.61	161.49	174.59	178.68	173.46	172.53
TG (mg/dL)[a]	184.98	174.30	167.64	163.35	162.37	183.18	182.20	165.04
TG (mg/dL)[b]	158.00	142.00	153.00	136.20	140.00	155.58	147.00	143.00
TG[a] Lg	2.212	2.175	2.179	2.156	2.152	2.186	2.165	2.152
HDL-C (mg/dL)[a]	36.27	37.07	37.83	39.19	37.49	37.56	37.31	38.52
HDL-C (mg/dL)[b]	35.00	36.00	37.00	37.51	36.00	36.00	36.00	37.00
HDL-C[a] Lg	1.548	1.557	1.564	1.581	1.564	1.562	1.563	1.576
A1C (%)[a]	6.755	6.619	6.669	6.790	6.428	7.078	6.924	7.011
ALT (U/L)[a]	29.73	28.94	29.94	28.84	29.49	30.94	29.51	29.53
ALT (U/L)[b]	27.00	25.00	25.00	25.00	23.00	24.80	23.00	24.00
ALT[a] Lg	1.432	1.414	1.428	1.410	1.400	1.423	1.395	1.398

Time frame (1 = baseline; 2 = 6 months; 3 = 1 year; and 4 = 2 years).
[a] = mean, [b] = median.
Lg = logarithmic transformed data measures for analysis.
A1C = hemoglobin A1C; ALT = alanine aminotransferase; BMI = body mass index; DBP = diastolic blood pressure; HDL-C = high-density lipoprotein cholesterol; SBP = systolic blood pressure; TC = total cholesterol; TG = triglycerides.

level only) are the primary structure components utilized for this study to gain insight into clinical outcomes.

This project was reviewed and approved by the VA and Wichita State University Institutional Review Board/research and development committees. Demographic data and biologic measures were retrieved and verified for accuracy by the primary investigator. All identifiers were removed (de-identified) from the data to ensure veteran privacy/anonymity.

ANALYSIS

Statistical Package for the Social Sciences (SPSS) premium version 19.0 academic statistical software (IBM Corporation, Chicago, Illinois) was used to evaluate group effect calculating repeat measures analysis of variance (ANOVA) with Bonferroni pairwise comparison and polynomial trend contrast analysis. A priori minimum sample size of n = 62 was determined for each group for ANOVA testing.[21] Missing values were addressed with the multiple imputation replacement procedure in SPSS. For analysis, assumptions of indepen-

Table 4. MOVE! *Effectiveness* and M*aintenance*—ANOVA findings

MOVE! intervention group—Baseline compared with 6 months, 1 year, and 2 years[a]			
Sample Size[a]			
n = 131	Lg mean BMI	Significant effect/decrease at 6 months and 1 year compared with baseline	(*F* [2.679, 348.235] = 4.628, *P* = .005)
n = 133	Mean SBP	Significant effect/decrease at 6 months, 1 and 2 years compared with baseline	(*F* [3, 396] = 5.269, *P* = .001)
n = 133	Mean DBP	No significant effect	(*F* [3, 396] = .797, *P* = .496)
n = 132	Mean TC	Significant effect/decrease at 6 months and 2 years compared with baseline	(*F* [2.780, 364.207] = 5.669, *P* = .001)
n = 130	Lg mean TG	No significant effect	(*F* [2.408, 310.673) = 3.158, *P* = .035) Bonferroni corrected *P* = .068)
n = 132	Lg mean HDL-C	Significant effect/increase at 2 years compared with baseline and at 2 years compared with 6 months and 1 year	(*F* [2.844, 372.598] = 9.847, *P* = .001)
n = 94	Mean A1C	No significant effect	(*F* [2.825, 262.730] = 1.675, *P* = .176)
n = 133	Lg mean ALT	No significant effect	(*F* [2.815, 371.574] = 1.047, *P* = .369)
Non-MOVE! control group—Baseline compared to 6 months, 1 year, and 2 years			
n = 133	Lg mean BMI	Significant effect/increase at 6 month and 2 years compared with baseline	(*F* [2.515, 332.036] = 6.237, *P* = .001)
n = 133	Mean SBP	No significant effect	(*F* [3, 396] = .196, *P* = .899)
n = 133	Mean DBP	Significant effect/decrease at 6 months compared to baseline	(*F* [3, 396] = 3.825, *P* = .010)
n = 133	Mean TC	No significant effect	(*F* [2.796, 369.066] = 1.346, *P* = .260)
n = 131	Lg mean TG	No significant effect	(*F* [3, 390] = 1.003, *P* = .391)
n = 133	Lg mean HDL-C	No significant effect	(*F* [3, 396] = 1.977, *P* = .117)
n = 76	Mean A1C	Significant effect/increase at 6 months, 1 and 2 years compared with baseline	(*F* [3, 225] = 15.512, *P* = .001)
n = 133	Lg mean ALT	No significant effect	(*F* [3, 396] = 1.069, *P* = .362)

[a] Sample size variance due to missing data sets.
Linear = rate of change over an interval of time moving directionally up or down in a line.
Quadratic = curved; change in the rate of change—accelerating or decelerating.
ANOVA = analysis of variance.
Lg = logarithmic transformed data measures for analysis.
A1C = hemoglobin A1C; ALT = alanine aminotransferase; BMI = body mass index; DBP = diastolic blood pressure; HDL-C = high-density lipoprotein cholesterol; SBP = systolic blood pressure; TC = total cholesterol; TG = triglycerides.

dent group, normality, and sphericity were adequately addressed. For data in which value exclusion was not feasible, use of logarithmic (Lg) transformation was implemented as a prudent alternative for this study to obtain acceptable normality of positively skewed data. For A1C data, exclusion of extreme values was completed (control = 8; intervention = 8; inclusive for all time points) and treated as missing values. For these data, sphericity was assumed or Huynh-Feldt corrected.

RESULTS

The *Reach* of the MOVE! program for FY 2007 to 2009 resulted in 1,574 confirmed eligible VHA patients who were screened and referred as intended (because referral/consult mechanisms varied until mid 2009, it is not 100% certain the complete referral set for this period was found even with utilized data mining measures). Of the 1,574 referred patients, 546 attended a MOVE! 101 introduction session with 230 of these patients (intervention-group pool) additionally attending at least 1 MOVE! 2 session (or equivalents). This resulted in 1,028 referred veterans who declined participation (non-MOVE! control-group pool).

A total of 133 veterans for each group were selected at random with completion of screening. The MOVE! intervention group attended a cumulative total of 567 sessions with a range of 2 to 18 visits each (M = 4.26; SD = 2.135). The non-MOVE! control group attended no intervention sessions. The 266 veterans included in this study were predominantly male (n = 232; 82.7%), middle-aged (55.86 ± 9.41 years), and white (n = 219; 82.3%) (Table 2). All biologic measures are shown at individual time points. For logarithmic transformed measures, raw mean and medians were provided for clinical relevance (Table 3).

Intervention *Effectiveness* is found with decreased raw mean percentage changes in BMI from baseline compared with 6 months, 1 year, and 2 year time periods for the MOVE! intervention group by 1.45%, 1.64%, and 1.37%, respectively; whereas the non-MOVE! control group increased by 1.84%, 1.39%, and 2.25%, respectively.

Further *Effect* significance and *Maintenance* were evaluated with repeated measure ANOVA calculations (Table 4) and polynomial trend analysis (Table 5). For the MOVE! intervention group, significant *Effect* for decrease in BMI, SBP, TC, and increased HDL-C at 6 months leveled off by 2 years, indicating decreased obesity with decreased HTN and dyslipidemia disease burden. Polynomial trend analysis contrasts showed significantly decreased trends for BMI (SBP, TC, and TGs) and an increased trend in HDL-C. Although A1C, DBP, and ALT showed an overall decrease, these were not significant. The *Effect* and decreased directional trend or stability of these measures supports the researchers' overall impact premise.

Comparison findings for the non-MOVE! control group, showed significant effect for increase in BMI and A1C with decreased DBP over time, indicating increasing obesity and diabetes disease burden with a decrease in HTN disease burden. Polynomial trend analysis contrasts showed significantly increased trend for BMI and A1C with decreased DBP. A finding of decreased DBP in the control group was not supported in the literature and was not expected. SBP and HDL-C levels remained stable with no significant trends. Total cholesterol, TGs, and ALT showed nonsignificant upward trends at 6 months, returning to baseline levels over time.

Biologic measure trends between groups tended to be opposed in comparison, even for nonsignificant findings—particularly at 6 months (exception for DBP in control group). Trends continued at an overall decelerated rate beyond 6 months or remain stable across 1 year and 2 years. Compared with baseline, there was a raw mean BMI spread change between groups of 3.29% at 6 months, 3.035% at 1 year, and 3.62% at 2 years.

DISCUSSION

Implications

Current findings are below many RCT predictor outcomes of 5% to 10% weight reduction for effect on correlated disease burden but, nonetheless, show a significant associated clinical impact that invokes due consideration.[10-15] While the intervention group showed higher BMI at baseline (37.19 kg/m^2) compared with the control group (33.73 kg/m^2), a convergence toward each other (36.68 kg/m^2 and 34.49 kg/m^2, respectively) at 2 years was noted. Overall, the intervention group had a sustained decrease in BMI of 1.37% (in the right direction) while the control group had a progressive increase of 2.25% (in the wrong direction), resulting in a concerning, progressive 3.62% difference change at 2 years.

Given the nature of the current study, firm clinical endpoints (ie, reduction in heart disease, diabetes, and stroke) cannot be projected. With a 10-year projected decrease of 6.85% for the MOVE! group and an 11.25% projected increase in BMI for the non-MOVE! group, it is not hard to see an association for an overall 10-year risk reduction for correlated chronic disease morbidity

Table 5. MOVE! Polynomial trends - ANOVA findings

MOVE! intervention group—Baseline compared with 6 months, 1 year, and 2 years			
Sample Size[a]			
n = 131	Lg mean BMI	Significant downward linear; and quadratic trend	(*F* [1, 130] = 5.496, *P* = .021); (*F* [1, 130] = 6.445, *P* = .012)
n = 133	Mean SBP	Significant downward linear; and quadratic trend	(*F* [1, 132] = 9.146, *P* = .003); (*F* [1, 132] = 4.851, *P* = .029)
n = 132	Mean TC	Significant downward linear trend	(*F* [1, 131] = 6.223, *P* = .014)
n = 130	Lg mean TG	Significant downward linear trend	(*F* [1, 129] = 4.943, *P* = .028)
n = 132	Lg mean HDL-C	Significant upward linear trend	(*F* [1, 132] = 3.125, *P* = .001)
n = 94	Mean A1C	Nonsignificant linear downward trend at 6 months; significant quadratic trend back to baseline by 2 years	(*F* [1, 93] = 5.437, *P* = .022)
		No significant trends in mean DBP and Lg ALT	
Non-MOVE! control group—Baseline compared with 6 months, 1 year, and 2 years			
n = 133	Lg mean BMI	Significant upward linear trend	(*F* [1, 132] = 7.296, *P* = .008)
n = 133	Mean DBP	Significant downward linear trend baseline to 6 months	(*F* [1, 132] = 5.582, *P* = .020)
n = 76	Mean A1C	Significant upward linear and quadratic trends	(*F* [1, 75] = 19.279, *P* = .001); (*F* [1, 75] = 13.951, *P* = .001)
		No significant trends in mean total cholesterol, SBP, Lg TG, Lg ALT, and Lg HDL-C	

[a] Sample size variance due to missing data sets.
Linear = rate of change over an interval of time moving directionally up or down in a line.
Quadratic = curved; change in the rate of change—accelerating or decelerating.
ANOVA = analysis of variance.
Lg = logarithmic transformed data measures for analysis.
A1C = hemoglobin A1C; ALT = alanine aminotransferase; BMI = body mass index; DBP = diastolic blood pressure; HDL-C = high-density lipoprotein cholesterol; SBP = systolic blood pressure; TC = total cholesterol; TG = triglycerides.

and mortality based on prior population trends.[4,6] Current findings give credence to prior NHES/NHANES obesity trends and research findings, giving urgency for prevention and focused lifestyle changes that promote downward trends in obesity and comorbid disease.[4,6,7,10-15]

Limitations

Retrospective studies, by design, lack control, which is the primary study limitation; however, controlled trials are often not the most appropriate approach for real-world practice basis inquiry. Retrospective studies are based on existing data sets that are often limited in number, with some timing variances for qualifying data. Possible bias for laboratory sample collection (fasting vs nonfasting) and other biologic data collection measure accuracy were delimited satisfactorily, as much as is feasible for retrospective records, and are acknowledged as possible limitations to study validity. A further limitation is lack of data on participation levels for exercise or dietary habits/change beyond baseline screening. The retrospective nature is also the study's greatest strength—lack of testing bias for intervention implementers (providers) and the study groups—real-world practice E*ffect* translation.

By design, this study was limited to lifestyle group effect only. Further comparison analysis on effect for age, ethnicity, gender differences, existing disease burden levels/differences, and primary care treatment

variables (ie, management; whether VHA or non-VHA as primary provider) were not parameters of this study. Some factors are traceable, while others would be data mining /extended-facility prohibitive. The aforementioned limiting factors lend potential bias to current study biologic measures and findings. The study is presented acknowledging the above limitation and potential bias—including those unknown.

RECOMMENDATIONS

For clinicians and their patients, current study findings indicate there is clinical relevance for MOVE! and similar weight management prevention programs as E*ffective* practice interventions M*aintained* over time. Continued MOVE! participation should be encouraged to support long-term outcomes as noted by the leveling off of improvement in BMI trends and effects on comorbid disease measures by 1 year for the MOVE! intervention group. Future strategies to increase participation (R*each*) need further development. Of the 1,574 veterans referred to MOVE! during the study time frame, 14.6% attended 2 or more sessions, while 65.3% declined participation. Additionally, since long-term results with lifestyle interventions require compliance, strategies to increase and consistently track participation levels need further attention.

Current VA initiatives addressing these issues include the TeleMed outreach MOVE! 101 sessions, which were initialized late during the study but are expected to expand to MOVE! 2 sessions. A future MOVE! initiative proposal includes 8 patient contacts in 4 months, with a goal of measuring intensity of participation.

There is also relevance for further weight management practice translated E*ffectiveness* studies. While equivalent standard primary care treatment is assumed for both groups, a specific effect question for medical management changes in disease control (HTN, lipids, and diabetes), including pharmaceutical intervention, degree of patient compliance, and level of disease burden, surfaced during the study with the unexpected finding of decreased DBP observed in the control group. Further study on BMI and obesity comorbid disease biologic measure trends compared with trends in medical management, including medication changes (addition/increase or decrease/discontinuation, etc), patient compliance, and degree of disease burden, are indicated. Trends in specific weight management intervention participation levels (activity dietary changes) as well as sociodemographic effects are also relevant. Insight into these possible effect associations is indicated to gain a clearer understanding of the effect MOVE!, and similar practice intervention prevention programs contribute.

CONCLUSION

As outlined in Healthy People 2020, more modest obesity objectives were proposed compared with the prior objectives.[3,5] Perhaps a trend in the right direction is the most realistic and attainable outcome with a population goal that eventually results in normalization of weight—particularly given that the current obesity issue did not occur overnight. Glasgow and colleagues (RE-AIM) previously noted that although they have lower E*fficacy*, interventions that are lower in cost and intensity and can be applied to larger populations for longer periods of time are more likely to have the most real-world impact E*ffectiveness*.[16] In practicality, these type of interventions are more likely to be implemented broadly with greater numbers of patients participating both short- and long-term. As found in prior evidence-based RCTs, the current study findings indicate there is clinical relevance for MOVE! and similar weight management programs for use as real-world practice interventions.[10-15]

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