Impact of a Participatory Wellness Continuing Medical Education Program on Physician Burnout and Well-Being

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Objective: Examine the impact of a participatory wellness continuing medical education (CME) program on physician burnout, wellness, and well-being. **Methods:** Physicians attending a 3-day wellness CME program. Self-reported questionnaires at baseline with paired analyses at 26-week follow-up. **Results:** Compared to baseline, at 26 weeks there were decreases in burnout ($P < 0.001$, ES −0.68), red meat consumption ($P = 0.02$, ES −0.29), and current stress levels ($P < 0.001$, ES −0.50). There were increases in fruit/vegetable consumption ($P < 0.001$, ES 0.55), energy levels at work ($P < 0.001$, ES 0.60) and at home ($P < 0.001$, ES 0.66), quality of life ($P < 0.001$, ES 0.53), and confidence ($P < 0.001$, ES 0.89) and frequency ($P = 0.01$, ES 0.32) of counseling patients on wellness. **Conclusion:** Attendance at this participatory wellness CME program was associated with improved physician burnout, health behaviors in diet, stress, energy, quality of life, and wellness counseling.

Keywords: physician health, burnout, physician health program, continuing medical education, wellness, well-being

LEARNING OUTCOMES

After completing this enduring educational activity, the learner will be better able to:

- Describe a wellness CME program composed of participatory elements in addition to didactic sessions.
- Recognize the impact of this participatory wellness CME program on physician burnout, wellness, and well-being.

Decreased well-being and increased burnout among physicians have attracted attention in recent time.[1,2] Well-being can be defined as the state of being happy, healthy, or prosperous.[3] There is not a clear distinction between well-being and wellness in the medical literature. Wellness can be defined as the quality or state of being in good health.[3] For the purposes of this article, wellness will be considered a subset of well-being. Wellness is determined, in part, by health behaviors in physical activity, diet, and stress management. Well-being involves other areas in addition to health behaviors including quality of life, fatigue, and burnout.[4]

Burnout, which is characterized by emotional exhaustion, depersonalization, and feelings of ineffectiveness and frustration, has been found to be more prevalent among physicians than the general population.[5,6] Physician burnout has also been shown to negatively affect patient safety and the quality of care given to patients.[7–9] The prevalence of burnout among physicians increased during the pandemic.[10]

Physician wellness has effects not only on the individual physician but also on their patients. Physicians who have better personal health habits are more likely to counsel patients on beneficial health behaviors.[11,12] One way to improve wellness behaviors is through wellness coaching. Wellness coaching is a close and confidential partnership between a patient and a national board-certified wellness coach, in which the patient moves toward better health and wellness by setting realistic goals, designing lifestyle experiments, overcoming barriers, and building self-awareness. Our team has found that wellness coaching can reduce stress, improve quality of life, and improve health behaviors in health care workers.[13]

Some wellness interventions have focused on burnout as an outcome. A study in physician trainees demonstrated a team-based incentivized exercise program resulted in higher levels of physical activity and increased quality of life, but the effect on burnout did not reach statistical significance.[14] An impact of wellness coaching on physician well-being was evaluated in a trial of six monthly professional coaching sessions in surgeons and found improved burnout and resilience.[15] Mindfulness-based approaches and stress management training have been effective strategies to help reduce burnout.[16]

A meta-analysis concluded that more research is needed on interventions to prevent or reduce burnout among physicians.[17] Creative programs are needed to improve health behaviors, wellness, well-being, and burnout among physicians. Continuing medical education (CME) programs are accessible to physicians and have been shown to improve physician performance and patient health outcomes.[18] Most CME programs are didactic. CME activities that are more interactive and are focused on outcomes considered important by physicians lead to more positive results.[18] Learning while actively performing physical activity and exercise, cooking, and wellness coaching in a participatory program may further help effectiveness of CME programs and implementation of wellness behaviors. There exist some CME programs that focus on wellness.[19] However, there is little published data on effectiveness of these types of programs.

Purpose

The aim of this study was to examine if a participatory wellness CME program improves areas of physician well-being over a 6-month

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Funding sources: None declared.

Conflicts of interests: None declared.

Author contributions: D.D.H., W.T., C.P.W., and M.M.C. conceived and designed the study; T.R. and J.F. collected the data.; S.J. analyzed the data; D.D.H. drafted the original manuscript; all authors critically reviewed the original manuscript; D.D. H. drafted the revised manuscript; all authors critically reviewed and approved the final manuscript.

Data availability: The datasets generated and analyzed during the current study are available from the corresponding author on reasonable request.

Ethical considerations and disclosure: This study was approved by the Mayo Clinic Institutional Review Board: #16-009837.

Supplemental digital contents are available for this article. Direct URL citation appears in the printed text and is provided in the HTML and PDF versions of this article on the journal's Web site (www.joem.org).

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DOI: 10.1097/JOM.0000000000003190

time period. The Healthy Living Program for Physicians (HLPP) is a CME program focused on wellness. The four primary areas of the program are physical activity and exercise, diet and nutrition, resilience, and health and wellness coaching. This CME activity differs from many other educational programs in that it includes more than didactic lectures. Many of the classes in this program involve active participation in various activities, and therefore, physicians learn through this participation. Attendees work with HLPP staff and take an active part in learning skills such as specific exercises, cooking, and wellness coaching. In addition, attendees are encouraged to tailor the skills they learn into a personalized wellness plan. The primary purpose of this study was to examine the impact over 6 months of this 3-day participatory wellness CME program on physician burnout. Additional outcomes evaluated include other components of well-being, including health behaviors in physical activity and diet, stress, energy, quality of life, resilience, and counseling habits of physicians on a healthy lifestyle.

METHODS

Design

The CME HLPP has been offered to physicians up to five times yearly since 2016, with a maximum of 15 attendees per session. It is listed along with other CME programs on the Mayo Clinic Continuous Professional Development web page (https://ce.mayo.edu) and offered to physicians of all specialties at a charge commensurate with other CME programs. The HLPP curriculum is outlined in Table 1. As part of this curriculum, attendees undergo a baseline physical activity assessment, which includes a treadmill stress test for cardiovascular fitness, body composition and bone density measurements by dual-energy x-ray absorptiometry (DEXA), a functional movement screen, and balance testing. Attendees can track parameters over time and use these baseline measurements to monitor progress.

TABLE 1. Healthy Living Program for Physicians Schedule

Day 1: (8.75 ABIM MOC and AMA credit hours)
Overview
Introduction to Coaching
Physical Activity Assessment
Treadmill stress test
Body composition by DEXA
Functional Movement Screen and Balance Testing
Strength Testing
Experience Wellness Coaching 1
Healthy Living Program Philosophy on Nutrition
Non-Exercise Activity Thermogenesis (NEAT): Sit Less and Move More
Burnout and Healthy Living Program Philosophy on Resilience
Coaching and Individual Wellness
Day 2: (8.75 ABIM MOC and AMA credit hours)
Nutrition Controversies
Weight Loss: Eat Less, Move More, But How?
SMART: Stress Management and Resilience Training
Lunch: Cooking Well
Integrative Medicine and Health
Healthy Living Program Physical Activity Philosophy and Practice
Restorative Yoga
Day 3: (5.5 ABIM MOC and AMA credit hours)
Tools and Tracking
Physician Burnout and the Physician Health Center
Experience Wellness Coaching 2
Electives (choose 2)
Pilates
Healthy Sleep
Personalize Your Nutrition Experiments
Social Support and Social Networks
Making Wellness Work for You and Your Patients

Some classes are didactic and presented in a standard classroom such as "Nutrition Controversies," "Burnout and Healthy Living Program Philosophy on Resilience," "Tools and Tracking," "Healthy Sleep," and "Integrative Medicine and Health." Other classes require active participation, in which attendees learn by doing as well as listening. These classes include "Non-Exercise Activity Thermogenesis (NEAT): Sit Less and Move More" (taken while walking on a treadmill desk), "Lunch: Cooking Well" (a cooking class in which attendees learn basic culinary skills and prepare their own lunch), "Guided Resistance and Cardio" (in which attendees perform the exercise prescription created for them based on the treadmill stress test and functional movement screen), "Yoga," and "Experiential Pilates" (in which participants experience introductory Yoga and Pilates mat classes). Attendees also meet one on one with a health and wellness coach and experience health and wellness coaching on a personal level while learning coaching skills they can apply in their own practice. They are encouraged to use all this information to develop their own personalized wellness plan in conjunction with the wellness coach assigned to them.

This research study took place as part of the CME HLPP from March 2017 to January 2020 in 13 different sessions. After signing up for the CME HLPP, all attendees were eligible and invited to voluntarily participate in this research study. No renumeration was offered for study participation. The study was approved by the Institutional Research Review Board at Mayo Clinic.

After obtaining written consent, study participation included completing a survey at baseline/prior to the on-site CME program and 26 (±4 weeks) weeks following the CME program. The study survey (Supplement 1, http://links.lww.com/JOM/B661) included Likert-based answers for some questions using an 11-point scale (0 to 10). Survey items inquired about burnout, health behaviors in physical activity (weeks in the past 4 weeks leading a physically active lifestyle), and diet (daily servings of fruit and vegetables and weekly servings of meat), confidence in having a physically active lifestyle and following a healthy diet, support for healthy living, quality of life (current stress level, energy level at work and home, and overall quality of life), resilience (ability to adapt, tendency to bounce back), and counseling habits (importance, confidence, and frequency) on a healthy lifestyle in their patients.

Burnout was measured by a previously studied single item from the emotional exhaustion domain of the Maslach Burnout Inventory (MBI) used under license with Mind Garden, Inc.[20,21] Objective questions based on guidelines for physical activity and a healthy diet were included.[22] Items on stress, energy, and quality of life were based on previous published work that used these items in patients and employees of an academic medical center.[13,23–26] Two items from the Connor-Davidson Resilience Scale[27] assessed resilience by asking about adapting to change and bouncing back after hardships. Items used to assess physician confidence level for lifestyle counseling[28] were adapted and questions were created to assess physicians' counseling habits.

Access to the baseline and postprogram surveys was distributed via emails with a link to an online survey (Qualtrics LLC, Provo, Utah). Attendees who did not complete the week 26 online survey after one email reminder received one telephone call to encourage completion of the survey. Almost all attendees (97%) who completed follow-up assessments did so by early 2020, just before the onset of the COVID-19 pandemic.

Sample

One hundred fifty-one physicians signed up for the HLPP program from March 16, 2017, to January 9, 2020, in 13 different cohorts. Of the 151 attendees, 142 (94%) enrolled in the study (Table 2). Fifty-seven percent were female and 41% were aged 40–49 years. There was a wide range of medical specialties represented, with Family Medicine

TABLE 2. Baseline Survey Distributions of 142 Physicians, by Week 26 Survey Completion Status

	Completer ($N = 66$)[1]	Noncompleter ($N = 76$)[a]	Total ($N = 142$)[a]	*P*
Demographics				
Gender				
Male	27 (40.9%)	34 (44.7%)	61 (43.0%)	0.65
Female	39 (59.1%)	42 (55.3%)	81 (57.0%)	
Age				
<40	21 (31.8%)	10 (13.2%)	31 (21.8%)	0.008
40–49	26 (39.4%)	32 (42.1%)	58 (40.8%)	
50–59	13 (19.7%)	22 (28.9%)	35 (24.6%)	
60–69	6 (9.1%)	11 (14.5%)	17 (12.0%)	
70+	0 (0.0%)	1 (1.3%)	1 (0.7%)	
Specialty				
Subspecialist	29 (43.9%)	34 (47.2%)	63 (45.7%)	0.70
Primary care	37 (56.1%)	38 (52.8%)	75 (54.3%)	
Burnout				
I feel burned out from my work				
Never	1 (1.5%)	0 (0.0%)	1 (0.7%)	0.64
Few times a year or less	5 (7.6%)	3 (3.9%)	8 (5.6%)	
Once a month or less	5 (7.6%)	2 (2.6%)	7 (4.9%)	
Few times a month or less	12 (18.2%)	23 (30.3%)	35 (24.6%)	
Once a week	15 (22.7%)	14 (18.4%)	29 (20.4%)	
Few times a week	16 (24.2%)	19 (25.0%)	35 (24.6%)	
Every day	12 (18.2%)	15 (19.7%)	27 (19.0%)	
Health behaviors				
Frequency in the past 4 wk leading physically active lifestyle: 150 min moderate intensity/week or 75 min vigorous intensity/week				
None	19 (28.8%)	31 (40.8%)	50 (35.2%)	0.12
1 wk	9 (13.6%)	9 (11.8%)	18 (12.7%)	
2–3 wk	11 (16.7%)	13 (17.1%)	24 (16.9%)	
4 wk	27 (40.9%)	23 (30.3%)	50 (35.2%)	
Confidence that you can have a physically active lifestyle (0 not at all confident to 10 extremely confident), mean (SD)	7.2 (2.6)	7.3 (2.9)	7.3 (2.7)	0.48
Daily servings of fruit and vegetables				
None	2 (3.0%)	0 (0.0%)	2 (1.4%)	0.46
1–2 servings	21 (31.8%)	26 (34.2%)	47 (33.1%)	
3–4 servings	30 (45.5%)	29 (38.2%)	59 (41.5%)	
5+ servings	13 (19.7%)	21 (27.6%)	34 (23.9%)	
Weekly servings of red meat				
None	11 (16.9%)	10 (13.2%)	21 (14.9%)	0.51
1 serving	9 (13.8%)	16 (21.1%)	25 (17.7%)	
2–3 servings	24 (36.9%)	31 (40.8%)	55 (39.0%)	
4–6 servings	14 (21.5%)	14 (18.4%)	28 (19.9%)	
7+ servings	7 (10.8%)	5 (6.6%)	12 (8.5%)	
Confidence to follow healthy diet most days of the week (0 not at all confident to 10 extremely confident), mean (SD)	6.4 (2.1)	7.0 (2.3)	6.7 (2.2)	0.04
Support system for maintaining healthy living (0 as bad as can be to 10 as good as can be), mean (SD)	6.4 (2.1)	7.0 (2.4)	6.7 (2.3)	0.11
Quality of life				
Current stress level (0 none to 10 very high), mean (SD)	7.1 (1.6)	6.9 (1.7)	7.0 (1.6)	0.70
Energy level at work (0 very low to 10 very high), mean (SD)	5.5 (2.0)	6.2 (1.8)	5.9 (1.9)	0.04
Energy level at home (0 very low to 10 very high), mean (SD)	4.7 (2.0)	5.4 (1.9)	5.1 (2.0)	0.06
Overall QOL (0 as bad as can be to 10 as good as can be), mean (SD)	6.1 (2.1)	6.8 (1.7)	6.5 (1.9)	0.09
Resilience				
I am able to adapt when changes occur				
Sometimes true	11 (16.7%)	16 (21.1%)	27 (19.0%)	0.18
Often true	37 (56.1%)	47 (61.8%)	84 (59.2%)	
True nearly all the time	18 (27.3%)	13 (17.1%)	31 (21.8%)	
I tend to bounce back after illness, injury, or other hardships				
Rarely true	1 (1.5%)	0 (0.0%)	1 (0.7%)	0.86
Sometimes true	5 (7.6%)	8 (10.5%)	13 (9.2%)	
Often true	36 (54.5%)	41 (53.9%)	77 (54.2%)	
True nearly all the time	24 (36.4%)	27 (35.5%)	51 (35.9%)	
Counseling of patients				
Importance in counseling patients on healthy lifestyle (0 not at all important to 10 extremely important), mean (SD)	7.7 (2.7)	8.3 (2.3)	8.0 (2.5)	0.17

Continued next page

TABLE 2. *(Continued)*

	Completer ($N = 66$)[1]	Noncompleter ($N = 76$)[a]	Total ($N = 142$)[a]	*P*
Confidence in counseling patients on a healthy lifestyle (0 not at all confident to 10 extremely confident), mean (SD)	6.5 (2.0)	6.8 (1.9)	6.7 (2.0)	0.25
How often do you counsel patients on a healthy lifestyle				
Never	5 (7.6%)	0 (0.0%)	5 (3.6%)	0.06
Sometimes	15 (22.7%)	18 (24.3%)	33 (23.6%)	
About half the time	12 (18.2%)	9 (12.2%)	21 (15.0%)	
Most of the time	28 (42.4%)	32 (43.2%)	60 (42.9%)	
Always	6 (9.1%)	15 (20.3%)	21 (15.0%)	

[a]*N* (%) shown unless otherwise specified. Frequencies not adding to the column total indicate missing data.

(31%) and Internal Medicine (21%) being the most common, and 54% of attendees identified themselves as primary care physicians. Geographic location of attendees also varied widely, with the majority practicing in the Midwestern United States.

Measures and Analyses

At each time point that the study survey was sent to the study attendees, a complete survey was defined as one in which at least 13 of the 16 key, nondemographic items were answered. All 13 cohorts were combined for the analyses. The distributions to the survey responses at baseline were summarized with frequencies and percentages, or means and standard deviations (SD), as appropriate. Analyses focused on the attendees who completed the baseline and 26-week surveys. Baseline distributions were compared between week 26 completers and noncompleters with chi-square tests for categorical items, and Wilcoxon rank-sum tests for ordinal items. Among the week 26 study completers, the key survey questions were summarized at each time point, along with the paired differences (week 26 − baseline), with means, SD, and the 95% confidence interval for the mean difference. The number of weeks leading a physically active lifestyle and actual servings of fruit and vegetables, and meat, were calculated from the midpoint of the answers to these questions. The changes across time were assessed with paired *t* tests (treating ordinal response items as continuous) and were also summarized with effect sizes (ES), defined as the mean difference divided by the SD of the difference. A "small" ES was defined as 0.2 to <0.5, "medium" ES as 0.5 to <0.8, and "large" ES as ≥0.8.[29] Statistical significance was defined by a *P* value of ≤0.05.

TABLE 3. Comparison of Baseline and Week 26 ($N = 66$[1])

	Mean (SD)					
	Baseline	Week 26	Difference[a]	95% CI[a]	Effect size[b]	*P*[c]
Burnout						
I feel burned out from my work (1 never to 7 every day)	5.0 (1.6)	4.1 (1.6)	−0.9 (1.3)	(−1.24, −0.58)	−0.68	<0.001
Health Behaviors						
Weeks in past 4 wk leading physically active lifestyle: 150 min of moderate intensity/week or 75 min of vigorous intensity/week	2.2 (1.7)	2.6 (1.6)	0.4 (1.7)	(−0.04, 0.81)	0.22	0.08
Confidence that you can have a physically active lifestyle (0 not at all confident to 10 extremely confident)	7.3 (2.5)	7.8 (2.0)	0.5 (2.1)	(−0.04, 1.04)	0.24	0.07
Daily servings of fruit and vegetables	3.0 (1.4)	3.7 (1.3)	0.6 (1.2)	(0.35, 0.94)	0.55	<0.001
Weekly servings of red meat	2.9 (2.2)	2.5 (2.3)	−0.4 (1.5)	(−0.80, −0.07)	−0.29	0.02
Confidence to follow healthy diet most days of the week (0 not at all confident to 10 extremely confident)	6.6 (2.0)	7.2 (1.7)	0.7 (1.8)	(0.23, 1.15)	0.38	0.004
Support system for maintaining healthy living (0 as bad as can be to 10 as good as can be)	6.5 (2.1)	7.3 (1.6)	0.8 (1.9)	(0.35, 1.34)	0.45	0.001
Quality of life						
Current stress level (0 none to 10 very high)	7.0 (1.7)	6.0 (1.8)	−1.0 (2.0)	(−1.55, −0.45)	−0.50	<0.001
Energy level at work (0 very low to 10 very high)	5.6 (2.0)	6.7 (1.6)	1.1 (1.8)	(0.59, 1.55)	0.60	<0.001
Energy level at home (0 very low to 10 very high)	4.8 (2.0)	5.9 (2.0)	1.2 (1.8)	(0.70, 1.65)	0.66	<0.001
Overall QOL (0 as bad as can be to 10 as good as can be)	6.1 (2.1)	7.3 (1.5)	1.2 (2.2)	(0.59, 1.72)	0.53	<0.001
Resilience						
I am able to adapt when changes occur (1 not true to 5 nearly true all the time)	4.1 (0.7)	4.3 (0.8)	0.2 (0.8)	(0.03, 0.40)	0.28	0.03
I tend to bounce back after illness, injury, or other hardships (1 not true to 5 nearly true all the time)	4.3 (0.7)	4.4 (0.7)	0.1 (0.7)	(−0.05, 0.32)	0.18	0.14
Counseling of patients						
Importance in counseling patients on healthy lifestyle (0 not at all important to 10 extremely important)	7.7 (2.7)	8.3 (2.2)	0.6 (2.3)	(−0.02, 1.12)	0.24	0.06
Confidence in counseling patients on a healthy lifestyle (0 not at all confident to 10 extremely confident)	6.4 (2.0)	8.2 (1.5)	1.7 (1.9)	(1.23, 2.22)	0.89	<0.001
How often do you counsel patients on a healthy lifestyle (1 never to 5 always)	3.2 (1.1)	3.5 (1.0)	0.3 (0.9)	(0.07, 0.51)	0.32	0.01

[a]Difference calculated as week 26 mean minus baseline mean (presented with 95% confidence interval for the mean difference).

[b]Effect size calculated as difference in means divided by the standard deviation of the differences, prior to rounding the means and standard deviations.

[c]*P* value from paired *t* test.

RESULTS

One hundred forty-two physician attendees completed the baseline study survey and 66 (46%) completed the 26-week survey. Baseline responses for all attendees, completers at 26 weeks, and noncompleters are listed in Table 2. Compared with noncompleters at 26 weeks, completers were younger, less confident they could follow a healthy diet most days of the week, and had lower energy levels at work. Completion status at 26 weeks was not related to gender or medical specialty (primary care vs other).

Survey responses at 26 weeks are presented in Table 3. Burnout was statistically significantly improved at 26 weeks with a medium ES (−0.9, 95% CI −1.24, −0.58, $P < 0.001$, ES −0.68).

Frequency of leading a physically active lifestyle in the prior 4 weeks increased slightly from a mean of 2.2 to 2.6 weeks, but this difference was not statistically significant ($P = 0.08$). Similarly, confidence to maintain a physically active lifestyle increased from 7.3 to 7.8, but this difference was not statistically significant ($P = 0.07$).

Mean servings of fruit and vegetables consumed per day statistically significantly increased from 3.0 to 3.7 (95% CI 0.35, 0.94, $P < 0.001$, ES 0.55). Mean servings of red meat consumed per week statistically significantly decreased from 2.9 to 2.5 (95% CI −0.80, −0.07, $P = 0.02$, ES −0.29). Confidence to follow a healthy diet was statistically significantly improved (0.7, 95% CI 0.23, 1.15, $P = 0.004$, ES 0.38). Having a support system for maintaining healthy living increased statistically significantly (0.8, 95% CI 0.35, 1.34, $P = 0.001$, ES 0.45).

Compared to baseline scores, statistically significant improvements with at least a medium ES were found for current stress levels (−1.0, 95% CI −1.55, −0.45, $P < 0.001$, ES −0.50), levels of energy at work (1.1, 95% CI 0.59, 1.55, $P < 0.001$, ES 0.60) and at home (1.2, 95% CI 0.70, 1.65, $P < 0.001$, ES 0.66), and overall quality of life (1.2, 95% CI 0.59, 1.72, $P < 0.001$, ES 0.53).

Measures of resilience showed mixed results. The ability to adapt when changes occur showed statistically significant improvement (0.2, 95% CI 0.03, 0.40, $P = 0.03$) with a small ES (0.28). The tendency to bounce back showed no statistically significant change.

The importance of counseling patients on a healthy lifestyle increased by 0.6, but it was not statistically significant ($P = 0.06$). Confidence to counsel patients on a healthy lifestyle statistically significantly increased, with a large ES (1.7, 95% CI 1.23, 2.22, $P < 0.001$, ES 0.89). Frequency of counseling patients on a healthy lifestyle statistically significantly increased, but the ES was small (0.3, 95% CI 0.07, 1.51, $P = 0.01$, ES 0.32).

DISCUSSION

Findings from the study surveys indicate that physicians who completed this 3-day participatory wellness CME program experienced improvements in burnout, diet, stress, energy levels, overall quality of life, resilience, and confidence level for counseling patients on a healthy lifestyle as measured 6 months after completion of the program.

Burnout showed improvement with a medium ES. The HLPP program included didactic and participatory classes in many areas of wellness, as well as personalized health and wellness coaching. It was not possible to determine which classes contributed to this improvement in burnout.

Similarly, it was not possible to determine which classes may have contributed to greater confidence in counseling patients on a healthy lifestyle, which showed the largest improvement and ES among the study survey questions. This greater confidence level, however, did not translate as readily into increased frequency of counseling patients. The reasons for this are unclear from the study, but frequency of counseling patients may be affected by other organizational influences such as the type of appointment and time available to spend on counseling within the appointment.

A limitation of the study is that it did not include a control group. Therefore, causal statements cannot be made, and it is possible that these changes were due to factors beyond participating in the course. For example, it is possible that the physicians who enrolled in the program were motivated to improve their quality of life and health behaviors and would have done so to some extent without participating in the CME HLPP. Another limitation is the modest study survey completion rate at 26 weeks (46% of those who filled out the baseline survey). However, this electronic completion rate is comparable with other completion rates in surveys among physicians and higher than other mail-based physician survey return response rates.[30–33] Finally, attendees were mostly White, so these findings may not apply to physicians of diverse backgrounds.

In this study, physicians who attended a 3-day participatory wellness CME program were able to improve over the ensuing 6-months burnout, diet, quality of life, resiliency, and their confidence level in counseling patients on a healthy lifestyle. Further studies in participatory CME programs for physicians appear warranted.

ACKNOWLEDGMENTS

We would like to thank our participants for their valuable time and contributions to our study.

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