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Evaluating "The REST of Your Life," a Workplace Health Program to Improve Employee Sleep, Health, Energy, and Productivity

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Abstract

Purpose: Sleep is critical for employee health, well-being, and productivity. Our purpose is to evaluate a sleep-focused interactive workplace health promotion program.

Design: We evaluate sleep and mental health before and after exposure to the program using a pre/post quasi-experimental pilot study design with surveys administered at baseline and 1-, 6-, and 12 months post-exposure (Phase 1). We design program evaluation surveys for dissemination when the program is offered broadly to hospital employees (Phase 2).

Setting: The study was conducted at a large teaching hospital in the Southeast U.S. in 2016.

Subjects: Subjects were full-time hospital employees.

Intervention: The program was presented to subjects in one four-hour interactive session.

Measures: In Phase 1 (n = 55), surveys included the validated Apnea Risk Evaluation System, Dysfunctional Beliefs About Sleep, Generalized Anxiety Disorder-7, Pittsburgh Sleep Quality Index and Patient Health Questionnaire. Phase 2 (n = 3935) utilized program evaluation surveys.

Analysis: We compare survey responses between pre- and post-program using a repeated measures analysis of variance with post-hoc tests.

Results: Statistically significant improvement in all sleep and mental health domains was demonstrated. In Phase 2, 81.9% reported "strongly agree" to willingness to recommend the program to co-workers.

Conclusion: We demonstrate improvement in employee sleep and mental health after exposure to a novel workplace health promotion program to improve sleep.

Keywords

sleep health, sleep disorders, fatigue management, employee health, workplace health promotion, short sleep, burnout, mental health, behavioral health, shift workers, high-risk employees, anxiety disorder, sleep health program, workplace absenteeism

Purpose

Sleep deprivation is a major issue among employees in worksites across the United States (U.S.) as 30% report sleeping fewer than 6 hours of sleep at night,[1] which is well below the recommended 7 to 9 hour range.[2] Sleep deprivation is associated with significant threats to employee health, including increased risk of diabetes, cardiovascular disease, and all-cause mortality.[3-5] Short sleep also takes a toll on workplace outcomes, as it has been associated with reduced performance, disability day usage, and absenteeism.[6-8] Short sleep is particularly concerning in the healthcare sector as it is a significant contributor to burnout.[9] Research has shown burnout to be reported by 54% of physicians[10] and more than

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70% of resident physicians.[11] In addition, insufficient sleep has been shown to have particularly dire consequences among healthcare workers in terms of both patient and employee safety. Specifically, extended duration shifts and short sleep schedules have been associated with increased risk of medical errors as well as motor vehicle accidents and crashes.[12]

Workplace health promotion programs are becoming increasingly common among worksites, often touted as a powerful tool for improving employee health.[13] According to a nationally representative study of worksites in the US, between 25 and 30% of worksites report health promotion programs addressing issues relating to nutrition and physical activity, respectively, yet sleep represents a significantly smaller proportion of all programs with fewer than 10% of worksites reporting a sleep or fatigue-management program.[14] Also, according to this nationally representative data, the worksites most likely to report a sleep enhancement or fatigue reduction program were worksites with large budgets or those in the retail, technology, or wholesale sectors,[15] as opposed to industries such as healthcare, which employs a significant proportion of workers on non-traditional schedules where sleep and fatigue are key top concerns.

According to a systematic review of workplace health promotion programs that evaluated sleep-focused interventions, programs, particularly those designed with thoughtful behavioral change techniques such as coaching and goal setting show promise for improving sleep among employees.[14] However, a limitation of the literature to date is the use of off-the-shelf sleep hygiene interventions that are not comprehensive. Specifically, several studies identified in the systematic review featured programs with simplistic sleep hygiene programs or interventions encouraging employees to nap.[14] In this study, we contribute to the growing literature on sleep-focused workplace health promotion programs by designing a comprehensive, classroom-based program with an emphasis on goal setting using an interdisciplinary group of sleep, medicine, and workplace wellness experts, along with employee health advocates, at a large teaching hospital in the Southeast U.S. We also evaluate the feasibility and acceptability of the program after its dissemination to the greater than 83,000 employee population at large.

Methods

Design

Using an interdisciplinary team, including experts in medicine, sleep science, and workplace wellness, we designed a multi-session, comprehensive workplace health promotion program. The program, entitled *The REST of Your Life*, was designed to be classroom-based, with interactive exercises, video tutorials with experts, narrative journaling, and goal-setting components. The program outline can be found in the Supplement.

The program was designed with input from employee health champions, or employee health advocates, hospital employees who volunteer to assist in the selection and dissemination of employee health programs. The program was designed in several stages, including a preliminary brainstorm to develop the outline for the topics to be covered. Then, a graphic designer and publisher developed written and visual materials that were included in a presentation deck to communicate key concepts in sleep, as well as a participant manual to accompany the presentation, which would be delivered either by an expert in sleep medicine, or a member of the hospital health and wellness team that was trained by the sleep expert.

After designing *The REST of Your Life* program and supporting presentation slides, participant notebooks, and facilitator's guide, we evaluated the program using a quasi-experimental pre-post pilot study design that was administered in 2016 (Phase 1). Next, we examined the feasibility of the program after it is rolled out to the larger employee population as part of the hospital's employee voluntary health offerings since 2016 (Phase 2). In Phase 1, we recruited participants from the employee population using emails and flyers posted around the hospital (Phase 1). At the end of the program, participants were asked to complete a 1-month, 6-month, and 12-month questionnaire which they received via electronic mail. Once the Phase 1 study was completed, the program was offered to all staff at the hospital as an ongoing health promotion program (Phase 2).

The REST of Your Life program was divided into four one-hour sessions taught as a half-day class. In each session, participants completed exercises and activities corresponding to the material they were learning. The format of the program included video instruction from sleep experts, live education from wellness coaches, exercises, and activities, as well as group discussion.

The main goal setting tool came at the end of the program in the form of a 4-week plan. The program provided a total of 31 "Rest Recipes" for participants to begin adding healthy sleep habits into their routine. Participants were directed to select two Rest Recipes to focus on each week for four weeks of follow-up so that by the end of the plan, they would have eight new sleep-healthy habits. The 31 Rest Recipes dealt with both sleep hygiene and sleep-healthy lifestyle practices. They included recommendations around sleep environment, sleep hygiene, supplements, jet lag recovery, stress recovery, gratitude, and nutrition.

Sample

For the Phase 1 pilot study, all full-time employees at the hospital aged 18–89 who were able to provide informed consent, willing to provide contact information, and commit to attending all program sessions were eligible and recruited until the study cap was met (n = 66). Employees who were on discipline or on leave of absence were excluded, as were those

with young children less than 2 years of age, those diagnosed with sleep disorder, or those living at or near construction zones were also excluded. Eligible participants who provided consent were enrolled into the study and invited to complete online baseline surveys, then were scheduled for 2 days when they would participate in the full program. Participants were provided paid leave from their usual duties, provided refreshments during the sessions, as well as compensation for their time away from work.

In Phase 2, all hospital employees received information about upcoming classroom sessions and were invited to participate. The program was taught in one four-hour and fifteen-minute session in person from 2016-2019 and then virtually beginning in 2020. Those who attended the program at their own choosing were asked to complete follow-up surveys. We report the responses from participants in the program who elected to provide survey-based feedback on the program. The study was approved by the AdventHealth Institutional Review Board (Protocol No.: 1645700-1).

Measures

Phase 1. Sleep and mental health were measured using validated questionnaires in Phase 1 at baseline, 1-month, 6-month, and 12-month post-exposure. All surveys were validated instruments assessing sleep and mental health. First, participants provided demographic information. Next, participants responded to sleep questions, including the Apnea Risk Evaluation System (ARES),[16] a validated questionnaire assessing sleep apnea risk with questions regarding neck size, body mass index, self-reported sleepiness, and snoring. An ARES score of 4 or higher indicates risk for sleep apnea. Participants also responded to the Dysfunctional Beliefs About Sleep (DBAS-16), a 16-item questionnaire assessing beliefs about sleep, such as "I can never predict whether I'll have a good or poor night's sleep" on a visual analog scale from strongly disagree (0) to strongly agree (10). Scores on the DBAS are averaged with a higher score indicating more dysfunctional beliefs about sleep.[17] Participants also completed the Pittsburgh Sleep Quality Index (PSQI), a self-administered questionnaire with 19 individual items divided into seven components, which are then combined for a global score, which if above 4 is indicative of poor sleep quality.[18] Participants also completed the Insomnia Severity Index (ISI), which is a measure to evaluate perceived sleep difficulties. The ISI is a self-reported questionnaire that consists of seven items to measure subjects' perception of the severity of their sleep issues, such as difficulty falling asleep, staying asleep, or waking too early on scales of frequency from none (0) to very severe (4). Scores on the ISI are tallied such that scores above 7 indicate greater severity of insomnia.[19]

Finally, to assess mental health, participants completed the General Anxiety Disorder-7 (GAD-7), screening measure of anxiety. It is a 7-item self-administered questionnaire on which the respondent reads a statement and indicates their response on 4-point Likert scales.[20] Participants completed the Patient Health Questionnaire (PHQ-9), assessing the participant's experiences, such as having "little interest or pleasure in doing things" on a scale from "not at all" (0) to "nearly every day" (3). Responses are summed, and higher scores indicate more mental health concerns.[21]

All data post-exposure is summed across the 12 months of follow-up, leaving 12-person months of data.

Table 1. Descriptive Statistics Summarizing the Phase 1 Study (n = 55).

Characteristic	Mean ± SD or N (%)
Age	43.7 ± 10.8 (55)
Gender	
Female	51 (92.7)
Male	4 (7.3)
Marital status	
Married/remarried	25 (45.5)
Divorced or widowed	12 (21.8)
Single	18 (32.7)
Child under the age of 12 at home	
Yes	13 (23.6)
No	42 (76.4)
Education	
Doctoral degree	1 (1.8)
Master's degree	7 (12.7)
Bachelor's degree	25 (45.5)
Associate degree	12 (21.8)
GED	1 (1.8)
High school	3 (5.5)
Other	6 (10.9)
Shift worker	
Yes	31 (56.4)
No	24 (43.6)

Phase 2. Participants in Phase 2 who participated in the voluntary program at a time of their choosing were asked either after the session or via email, to complete a short survey assessing feasibility and acceptability of the program. Specifically, participants were asked to report their responses to the following: "This training made me more aware of how important rest is to my health," "I would recommend *The REST of Your Life* program to my co-workers," "I will implement new strategies I have learned to improve my rest habits," and "Overall, I was satisfied with *The REST of Your Life* program." Participants marked responses "strongly disagree" to "strongly agree." The survey responses we have are from 2017-July 2020. At the time of writing, 3935 participants have successfully completed the program from the approximately 24,000 employee population at AdventHealth and most provided feasibility/acceptability data, which are reported in this paper.

Table 2. Descriptive Statistics Summarizing Sleep Variables in the Phase 1 Study at Baseline, 1 Month, 6 Months, and 12 Months Post-Exposure.

	Responses to Sleep Variables by Study Timepoint			
		1 Month	6 Months	12 Months
	Baseline	Post-Exposure	Post-Exposure	Post-Exposure
Variable	Mean ± SD (N)	Mean ± SD (N)	Mean ± SD (N)	Mean ± SD (N)
ARES	8.58 ± 3.99 (62)	8.30 ± 3.89 (54)	6.16 ± 3.16 (50)	6.26 ± 3.69 (38)
PSQI	7.87 ± 3.35 (63)	6.15 ± 3.18 (54)	5.05 ± 2.69 (38)	6.09 ± 3.07 (33)
ISI	11.19 ± 4.74 (62)	9.09 ± 4.95 (54)	6.71 ± 4.05 (48)	7.49 ± 5.01 (35)
DBAS-16	4.81 ± 1.55 (62)	4.53 ± 1.55 (54)	Not available	3.67 ± 1.75 (35)
GAD-7	6.02 ± 6.14 (62)	5.15 ± 4.85 (54)	2.92 ± 3.55 (49)	2.80 ± 3.31 (35)
PHQ9	6.19 ± 4.29 (62)	5.13 ± 4.14 (53)	2.89 ± 2.90 (44)	3.69 ± 3.29 (35)

Notes.
An ARES score of 4 or 5 indicates low risk; 6 to 10 indicates high risk, and 11 or more indicates very high risk.
A PSQI score of 5 or greater indicates poor sleep quality; a score of 4 or fewer indicates good sleep quality.
An ISI total score of 0–7 indicates no clinically significant insomnia; a score of 8–14 indicates subthreshold insomnia; a score of 15–21 indicates clinical insomnia (moderate severity); and a score of 22–28 indicates severe clinical insomnia.
Scores on the DBAS-16 are averaged, with higher scores indicating more dysfunctional beliefs about sleep.
A GAD-7 total score of 0–4 indicates minimal anxiety; a score of 5–9 indicates mild anxiety; a score of 10–14 indicates moderate anxiety; and a score of 15–21 indicates severe anxiety.
A PHQ9 total score of 0–4 indicates no/minimal depression; a score of 5–9 indicates mild depression; a score of 10–14 indicates moderate depression; and a score of 15–19 indicates moderately severe depression; and a score of 20–27 indicates severe depression.

Analysis

For the description of baseline characteristics, continuous variables were presented as mean, standard deviation, and categorical variables were summarized as frequencies and percentages. Due to the right skewness of score data, all original scores went through square root transformation before modeling. The normality of the data was improved after transformation. All the transformed data passed the Shapiro-Wilks normality test ($p > .01$), except for GAD-7-6 months ($p = .0034$). A repeated measures analysis of variance (ANOVA) model was applied for each square root-transformed score, followed by post-hoc pairwise comparisons with Tukey adjustment. A value of alpha = .05 was the threshold for significance in all analyses. All analyses were conducted in SAS (Version 9.4).

Results

Phase 1 participant demographic characteristics are shown in Table 1. Average age was 43.7 years of age (SD = 10.8 years). Participants were primarily female (92.7%). Participants were most commonly either married (45.5%) or single (32.7%). Participants commonly did not have children at home (76.4%), and just over 50% worked shift schedules.

Phase 1 sleep and mental health variable descriptive statistics are shown in Table 2. Responses to the ARES averaged 8.58 ± 3.99 at baseline and 6.26 ± 3.69 at 12-months post-exposure. DBAS responses at baseline averaged 4.81 ± 1.55 and 3.67 ± 1.75 at 12-months post-exposure. GAD responses averaged 6.02 ± 6.14 at baseline and 2.80 ± 3.31 at 12-months post-exposure. ISI responses averaged 11.19 ± 4.74 at baseline and 7.49 ± 5.01 at 12-months post-exposure. Responses to the PHQ9 averaged 6.19 ± 4.29 at baseline and 3.69 ± 3.29 at 12-months post-exposure. Finally, PSQI averaged 7.87 ± 3.35 at baseline, 6.09± 3.07 at 12-months post-exposure. The full descriptive statistics at each study time point can be seen in Table 2.

Table 3 displays results of the ANOVA and post-hoc Tukey tests. Results from the ANOVA with Tukey post-hoc tests are shown in Table 4. ARES has the significant main effect of time ($p < .0001$) which indicated that there are significant differences between the repeated measures. From the post-hoc tests, 4 pairwise comparisons are significant: 0 month vs 6 months ($p = .0001$), 0-month vs 12-months ($p = .0012$), 1 month vs 6 months ($p < .0001$), and 1 month vs 12 months ($p = .0009$); 2 pairwise comparisons are not significant: 0 month vs 1 month ($p = .9513$) and 6 months vs 12 months ($p = .9844$).

The responses to the PSQI demonstrated a significant main effect of time ($p < .0001$) which indicated that there are significant differences between the repeated measures. From the post-hoc test results, 3 pairwise comparisons are significant: 0 month vs 1 month ($p < .0001$), 0 month vs 6 months ($p < .0001$), and 0 month vs 12 months ($p = .0032$); 3 pairwise comparisons are not significant: 1 month vs 6 months ($p = .1240$), 1 month vs 12 months ($p = .9543$), and 6 months vs 12 months ($p = .5680$).

Regarding the ISI, there was a significant main effect of time ($p < .0001$) which indicated that there are significant differences between the repeated measures. From the post-hoc test results, 4 pairwise comparisons are significant: 0 month vs 1 month ($p < .0001$), 0 month vs 6 months ($p < .0001$), 0 month vs 12 months ($p < .0001$), and 1 month vs 6 months

Table 3. Analysis of Variance with Tukey Post-Hoc Analysis of Sleep Variables at each Follow-Up Time as Compared to Baseline or 1 Month Post-Exposure.

	Overall Time	Tukey Post-Hoc Comparisons (Baseline v Follow-Up)					
Variable	Effect	0 vs 1	0 vs 6	0 vs 12	1 vs 6	1 vs 12	6 vs 12
ARES	<.0001	.9513	.0001	.0012	<.0001	.0009	.9844
PSQI	<.0001	<.0001	<.0001	.0032	.1240	.9543	.5680
ISI	<.0001	<.0001	<.0001	<.0001	.0002	.0785	.9850
DBAS-16	.0006	.1923		.0004		.0016	
GAD-7	<.0001	.9467	.0004	.0030	<.0001	.0023	.9990
PHQ9	<.0001	.0727	<.0001	<.0001	<.0001	.0059	.9425

Notes.
An ARES score of 4 or 5 indicates low risk; 6 to 10 indicates high risk, and 11 or more indicates very high risk.
A PSQI score of 5 or greater indicates poor sleep quality; a score of 4 or fewer indicates good sleep quality.
An ISI total score of 0–7 indicates no clinically significant insomnia; a score of 8–14 indicates subthreshold insomnia; a score of 15–21 indicates clinical insomnia (moderate severity); and a score of 22–28 indicates severe clinical insomnia.
Scores on the DBAS-16 are averaged, with higher scores indicating more dysfunctional beliefs about sleep.
A GAD-7 total score of 0–4 indicates minimal anxiety; a score of 5–9 indicates mild anxiety; a score of 10–14 indicates moderate anxiety; and a score of 15–21 indicates severe anxiety.
A PHQ9 total score of 0–4 indicates no/minimal depression; a score of 5–9 indicates mild depression; a score of 10–14 indicates moderate depression; and a score of 15–19 indicates moderately severe depression; and a score of 20–27 indicates severe depression.

Table 4. Descriptive Statistics Summarizing Program Implementation and Participant Evaluation Statistics.

	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		
Question	N	%	N	%	N	%	N	%	N	%	Total
1. This training made me more aware of how important rest is to my health	9	.3%	2	.1%	19	.7%	406	14.9%	2298	84.1%	2734
2. I would recommend *The REST of Your Life* program to my co-workers	3	.1%	5	.2%	21	.8%	447	17.0%	2147	81.9%	2623
3. I will implement new strategies I have learned to improve my rest habits	2	.1%	2	.1%	21	.8%	609	22.5%	2070	76.6%	2704
4. Overall, I was satisfied with *The REST of Your Life* program	2	.1%	4	.1%	14	.5%	456	16.6%	2272	82.7%	2748

(p = .0002); 2 pairwise comparisons are not significant: 1 month vs 12 months (p = .0785) and 6 months vs 12 months (p = .9850). The DBAS-16 had a significant main effect of time (p = .0006) which indicated that there are significant differences between the repeated measures. From the post-hoc test results, 2 pairwise comparisons are significant: 0 month vs 12 months (p = .0004) and 1 month vs 12 months (p = .0016); 1 pairwise comparison is not significant: 0 month vs 1 month (p = .1923).

Responses to the GAD-7 demonstrated a significant main effect of time (p < .0001) which indicated that there are significant differences between the repeated measures. From the post-hoc test results, 4 pairwise comparisons are significant: 0 month vs 6 months (p = .0004), 0 month vs 12 months (p = .0030), 1 month vs 6 month (p < .0001), and 1 month vs 12 months (p = .0023); 2 pairwise comparisons are not significant: 0 month vs 1 month (p = .9467) and 6 month vs 12 month (p = .9990).The responses to the PHQ9 also demonstrated a significant main effect of time (p < .0001) which indicated that there are significant differences between the repeated measures. From the post-hoc test results, 4 pairwise comparisons are significant: 0 month vs 6 months (p < .0001), 0 month vs 12 months (p < .0001), 1 month vs 6 months (p < .0001), and 1 month vs 12 months (p = .0059); 2 pairwise comparisons are not significant: 0 month vs 1 month (p = .0727) and 6 months vs 12 month (p = .9425).

Table 4 displays the results of the Phase 2 feasibility and acceptability survey results. There were a large proportion of participants who responded, "Strongly agree" to the feasibility and acceptability questions, including "This training made me more aware of how important rest is to my health" (84.1%) and "I would recommend *The REST of Your Life* program to my co-workers" (82.7%).

Discussion

Sleep deprivation poses a significant threat to health and safety among healthcare workers.[7,10,12] Risk of insufficient sleep and

associated consequences, such as mental health concerns, among healthcare workers is particularly worrisome amidst the current coronavirus disease 2019 (COVID-19) pandemic.[22] Unfortunately, few workplace health promotion programs in the U.S. focus on sleep.[15] This study describes the development of a comprehensive, interactive program with a focus on goal setting and instructor-led education on sleep, energy balance, and fatigue management entitled *The REST of Your Life*. We evaluate the sleep and mental health outcomes of the program in a quasi-experimental pilot study, then examine employee responses to the program during the course of its dissemination as a worksite-based health promotion program in a large teaching hospital in the U.S. Southeast.

Results demonstrate a significant change over time in the direction of improved sleep and mental health among the study participants who received *The REST of Your Life* program. It is notable that we observed a significant decrease in sleep disorders risk, specifically sleep apnea (the ARES questionnaire) and insomnia symptoms (the ISI), and sleep quality (PSQI), yet none of the follow-up values on the sleep assessments were on average below the clinically meaningful thresholds for being low risk. On the other hand, mean responses to the measures assessing anxiety (GAD-7) and depression (PHQ9) did demonstrate a significant decrease whereby follow-up values were below the clinically meaningful threshold for anxiety and depression, respectively. These results suggest that the program was successful in improving healthy cognitions but also behavioral patterns relating to sleep among attendees. In so doing, our paper contributes to the literature that shows when workplace health promotion programs can be designed with behavioral change techniques, they are well-poised to positively impact employee sleep,[14] which in turn may impact other domains, including worker safety as well as patient safety and satisfaction.

In the Phase 1 portion of this study, more than 50% of participants were shift workers. Shift workers face tangible barriers to their sleep and circadian alignment, as these workers are typically shifting from one sleep schedule for workdays and another for days off within a particular week. It is therefore promising that our results showed in the aggregate that participation in the program improved sleep, even for these high-risk employees.

In the Phase 2 portion of this study, when the program was disseminated to over 3000 employees as part of the existing employee health promotion initiatives in the healthcare organization, the survey results suggest that the overwhelming majority (>80%) rate the program very high and would encourage their co-workers and friends to participate.

Overall, the results of the Phase 1 pilot study and Phase 2 acceptability and feasibility assessments detailed in this manuscript provide preliminary evidence that *The REST of Your Life* is a promising approach for improving sleep and mental health among healthcare workers. The program was designed originally to be delivered in-person but was adapted for virtual deployment during the COVID-19 pandemic. Although the pilot study described here that examined the sleep and mental health outcomes of *The REST of Your Life* was conducted in 2016, future research may administer the program to healthcare workers amidst the current COVID-19 pandemic to determine the impact of the program at a time when sleep difficulties and mental health are high among these groups. Future evaluation efforts may be undertaken to examine outcomes of the program delivered in-person compared to online. Future research may examine the potential impact of the program amidst the elevated mental health concerns of COVID-19,[23] which undoubtedly affect sleep. In addition, future research may explore the impact of the program on non-healthcare audiences, such as employees in retail, technology, or other sectors.

Limitations

Despite the strengths of this study, including the design of a program with content experts and the inclusion of employee advocates to ensure the information is appropriate and accessible, there are several limitations. First, in the Phase 1 study, there were issues with data entry and participant follow-up over the 12-month study duration. Therefore, the dropout of participants may have affected the results. Second, participants in the Phase 1 study were primarily female, with very few male participants. Future research may consider methods for better engaging male participants. Fourth, unfortunately demographic information on employees was not captured in the Phase 2 portion of the study. Further, the analyses presented in this manuscript are unadjusted and must therefore be interpreted with caution. Finally, while the *Rest of Your Life* included goal setting exercises, the program did not offer personalized follow-up for attendees on their goals and progress. Future research may consider developing improved methods of follow up for attendees to ensure they feel supported and able to reach their goals.

So What?

What is Already Known About the Topic?

Sleep deprivation is a key concern among employed adults in the U.S., particularly those employed in healthcare.

What Does This Article Add?

We design, using an interdisciplinary team of sleep, medicine, and workplace wellness experts, a comprehensive sleep education program. We evaluate the program using a quasi-experimental design and then aggregate survey responses collected from employees who participated in the health promotion program after it was disseminated to the employee population at large. Results suggest an improvement in all parameters measured in the pilot study over time, and favorable

evaluations of the program from participants after dissemination (Phase 2).

What are the Implications for Health Promotion Practice or Research?

Taken together, these results suggest that a comprehensive program for improving sleep and energy while reducing fatigue is a promising approach to address the pervasive issue of sleep deprivation in healthcare settings.

Author Contributions

All authors conceptualized the study. Dr Robbins drafted the initial manuscript, and all authors provided substantial intellectual contribution in the subsequent editing and draft stages. All authors approved the submitted version of this manuscript.

Declaration of Conflicting Interests

The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: Dr. Robbins has received consulting fees from AdventHealth. Mr. Yi, Mr. Chobotar, Mrs. Hawkins, Mrs. Putt, and Drs. Pepe and Manoucheri are employees at AdventHealth.

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Ethical Approval

This study was approved by the AdventHealth Institutional Review Board (Protocol No: 1645700-1645701).

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Supplemental material

Supplemental material for this article is available online.

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