

A Worksite Wellness Intervention: Improving Happiness, Life Satisfaction, and Gratitude in Health Care Workers

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Abstract

Objective: To assess the effect of a 12-week Stress Management and Resilience Training (SMART) program on happiness, life satisfaction, gratitude, mindfulness, spirituality, and stress in health care workers.

Participants and Methods: Participants were members of an employee wellness center at an academic health care center. Participants were enrolled as cohorts of 12 to 18 individuals and received the intervention at an employee wellness center from February 19, 2013, to February 27, 2017. The study was designed as a prospective, nonrandomized, single-arm clinical trial that included a 3-month in-person SMART program (defined as the intervention), with an additional 3-month postintervention follow-up period (6 months total). Outcomes were assessed at baseline (T0), end of intervention (T3), and after the postintervention follow-up period (T6) and included Subjective Happiness Survey, Satisfaction with Life Scale, Gratitude Scale, Mindful Attention Awareness Scale, Functional Assessment of Chronic Illness Therapy - Spiritual Well-Being, and Perceived Stress Scale.

Results: Of the 110 participants who enrolled and provided consent, 98 participants (89%) completed the T0 and T3 assessments and 85 participants (77%) completed the T0, T3, and T6 assessments. On comparing the T0 and T6 responses, we observed statistically significant improvements ($P < .001$) in all the domains studied: subjective happiness (baseline average, 4.6; T6 average, 5.5; average difference, 0.9; 95% CI, 0.6-1.0), life satisfaction (baseline average, 22.8; T6 average, 27.5; average difference, 4.7; 95% CI, 3.6-5.9); gratitude (baseline average, 35.8; T6 average, 39.3; average difference, 3.5; 95% CI, 2.6-4.5), mindfulness (baseline average, 3.5; T6 average, 4.2; average difference, 0.7; 95% CI, 0.6-0.9), Functional Assessment of Chronic Illness Therapy - Spiritual Well-Being (baseline average, 29.9; T6 average, 37.4; average difference, 7.5; 95% CI, 6.0-9.2), and percentage of people reporting high stress (baseline, 97.6%; T6, 67.1%). Similar results were observed when comparing the T0 and T3 responses.

Conclusion: In health care workers, training in the SMART program was associated with statistically significant improvements in happiness, satisfaction with life, gratitude, mindfulness, spirituality, and stress ($P < .001$). Given the importance of stress in the workplace, larger randomized trials and broader dissemination of the program in health care workers is warranted.

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An expanding body of literature documents a correlation between happiness and positive outcomes for employees and organizations. Happiness is the experience of joy, contentment, or positive well-being, combined with a sense that one's life is good, meaningful, and worthwhile.¹

A meta-analysis of more than 200 studies involving 275,000 people worldwide concluded

that happiness is associated with success in multiple domains, including health, longevity, relationships, sociability, creativity, energy levels, engagement, work presenteeism, and performance.^{2,3} Exceptional work performance by happy employees extends beyond their job description tasks to benefit co-workers and the organization.⁴ This behavior, called "organizational citizenship behavior,"



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encompasses traits such as conscientiousness, emotional self-regulation, altruism, cooperation, making constructive suggestions, developing oneself, and spreading goodwill.^{5,6} Furthermore, positive emotions, such as happiness, improve an individual's ability to adapt to change, build resources, and rebound from adversity and stress.^{7,8}

Despite the research on happiness in the general population, no published studies have assessed the potential role happiness plays in enhancing positive functioning among health care workers. In contrast to examining happiness in health care workers, extensive studies have concentrated on distressed physicians or nurses. These studies on physician and nurse wellness associate high stress levels with depression,⁹ divorce,^{10,11} substance abuse,⁹ and burnout.^{12,13} Research shows that burnout impairs the health care system, generating career dissatisfaction,¹⁴ employee turnover,^{15,16} increase in medical errors,^{17,18} decrease in the quality of care, and low patient satisfaction.¹⁹⁻²¹ Furthermore, research shows that stress is problematic in medical school students^{22,23} and spouses¹¹ of those employed in health care.

Previous interventions for health care workers have focused on reducing burnout in physicians through a team-based incentivized exercise program,²⁴ mindfulness training,²⁵ facilitated physician small-group curriculum,^{26,27} cognitive-behavioral therapy,²⁸ and organizational improvements addressing physician concerns (ie, communication, workflow, quality improvement projects).²⁹ Nevertheless, innovative solutions to decrease stress and burnout are needed to improve scalability and reach a broader population.

Enhancing happiness appears to be one such solution. Although it has been well documented that stress is prevalent in health care workers,³⁰ there is a gap in literature on how happiness can potentially impact health care workers, especially in the area of stress reduction. Previous research suggests that a person's happiness depends on the integration of 3 factors: (1) 50% genetic inheritance, (2) 10% life circumstances, and (3) 40% intentional choices.³

Because intentional choices have been shown to account for 40% of a person's level of happiness, an innovative approach to

improve intentionality might enhance both happiness and other well-being measures. One such approach, Stress Management and Resilience Training (SMART), was developed at our academic health care center to improve the intentional choices people make in their lives. In previous research, SMART has shown efficacy for enhancing resilience, improving quality of life, and decreasing stress among physicians,^{31,32} nurses,³³ and patients with breast cancer.^{34,35} The potential impact that SMART may have on happiness has not been examined, and specifically how SMART may impact happiness among health care workers. This study examined the efficacy of SMART as a worksite wellness intervention to improve happiness and well-being in health care workers.

PATIENTS AND METHODS

The study was approved by the institutional research review board, and participants provided written informed consent. The participants were members of an employee wellness center at an academic health care center and self-selected to attend SMART. Participants were enrolled as cohorts of 12 to 18 individuals; 10 sequential cohorts received the intervention from February 19, 2013, to February 27, 2017. Participants were employees (70%), spouses or same-sex domestic partners (17%), volunteers (6%), retirees (5%), and students (2%). Students included residents, fellows, allied health students, and medical school students, all of whom were involved in health care activities. Volunteers needed to be active in providing ongoing services to patients, and retirees had careers in the health care setting.

Study Measures

Study questionnaires were completed at baseline (T0), at the end of the final SMART session (T3), and after a 3-month postintervention follow-up period (T6). Participants unable or unwilling to attend an in-person follow-up session were contacted to complete the surveys through e-mail. Similar to previous studies, participants were defined as a "program completer" if they attended at least 75% (9 of the 12) of the sessions.³⁶ Participants who did not attend at least 9 sessions and/or did not complete the T3 questionnaires

were classified as “program dropouts.” Study questionnaires included measures of happiness, satisfaction with life, gratitude, mindfulness, spirituality, and perceived stress.

Subjective Happiness Survey. The Subjective Happiness Survey (SHS) is a 4-item global subjective assessment of happiness. Participants respond on a 7-point scale (1 = not a very happy person, 7 = a very happy person). A high score on the SHS indicates a higher level of happiness. Results have indicated that the SHS has high internal consistency, which has been found to be stable across samples.^{37,38}

Satisfaction With Life Scale. The Satisfaction with Life Scale is a 5-item assessment to measure satisfaction with people’s lives as a whole. Participants respond on a 7-point scale (1 = strongly disagree, 7 = strongly agree). The scale shows good convergent validity with other scales and with other types of subjective well-being assessments.³⁹

The Gratitude Questionnaire-Six-Item Form. The Gratitude Questionnaire-Six-Item Form is 6-item self-report measure on the disposition to experience gratitude. Participants respond on a 7-point scale (1 = strongly disagree, 7 = strongly agree). The Gratitude Questionnaire-Six-Item Form is positively related to optimism, life satisfaction, hope, spirituality, forgiveness, and empathy and negatively related to depression, anxiety, materialism, and envy.⁴⁰

Mindfulness. The Mindfulness Attention Awareness Scale is a 15-item measure assessing mindfulness of moment-to-moment experiences. This 6-point scale measures the frequency of mindful states in day-to-day life, using both general and situation-specific statements. Higher scores indicate greater mindfulness.⁴¹

Spirituality. The Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being is a 12-item questionnaire measuring spiritual well-being. It has been used in many patient clinical settings as it relates to an individual coping with disease or chronic illness.^{36,42}

TABLE 1. SMART Program 12-Session Weekly Content

Session	Topic of discussion	Skill building practice
1	Origins of Stress	Awareness of Stress and Thought Pattern Tendencies
2	Attention Training	Attention Training Experience
3	Gratitude	Upon Waking: Express Gratitude to 5 People
4	Compassion	Walking Wish You Well
5	Acceptance	Relaxation Technique
6	Meaning & Purpose	Find Personal Meaning to Daily Interactions
7	Forgiveness	Preemptive Forgiveness
8	Relationships	Postpone Judgments of Others
9	Meditation	Meditation CD
10	Patience & Anger	Practice Acceptance and Do Not Try to Improve Others
11	Spirituality	Explore Personal Spiritual Practices
12	Personal Integration & Practice into Life	Set Intentions and Practices for 3-Mo Follow-up Session

Perceived Stress. The Perceived Stress Scale (PSS) is a 14-item self-report tool that provides a global measure of perceived stress.⁴³ Responses range on a 5-point scale from “never” to “very often.” A higher score indicates greater stress. The PSS correlates well with life events, stress measures, and social anxiety and has adequate reliability ($\alpha=.84, .85, \text{ and } .86$) in 3 different samples.

Sample Size Calculation. It has been proposed that an effect size of 0.5 (average difference divided by the SD) is a clinically meaningful change in quality-of-life studies.⁴⁴ To detect a difference of this magnitude for a given continuous outcome, a total of 51 participants would be needed (1% type I error rate due to multiple statistical tests/outcomes, 80% power, paired *t* test). Given that the study planned to include several measures, and given the uncertainty of each measure’s distribution as well as the dropout rate, the aim was to enroll at least 100 participants into the study.

Study Intervention

The SMART program was created by a physician (A.S.) in the Division of Complementary and Integrative Medicine with extensive experience in resilience training. The 12-week program format was designed by a team comprising the physician creator of SMART, a licensed clinical psychologist, and certified wellness coaches with worksite wellness experience. The SMART program facilitators were

trained by the physician through an intensive 6-month course before leading the program.

The study intervention consisted of 60- to 90-minute educational and participatory sessions for 12 consecutive weeks. The weekly topics included (1) neuroscience and biology of stress; (2) attention training to improve intentional attention; and (3) developing a positive mindset governed by 5 core principles—gratitude,^{45,46} compassion,⁴⁷ acceptance,^{48,49} meaning,⁵⁰ and forgiveness^{35,51-53}—to better reframe stressful thoughts and events and find greater happiness (Table 1).

Statistical Analyses

Participants' demographic characteristics were summarized with frequencies and percentages (noting that age was reported in decades). Scores

were summarized with means and SDs at baseline (T0), end of intervention (T3), and after the postintervention follow-up period (T6). Average scores were compared between time points using paired *t* tests, average differences with 95% CIs were reported, and effect sizes at follow-up were calculated as the difference in absolute value from baseline divided by the SD of the paired differences. Perceived stress (low <14, high ≥14) was reported categorically with frequencies and percentages and was compared between time points with Bowker test. All analyses were performed among those who completed the T0 and T3 assessments ("program completers"), at a minimum, and also among participants who completed the T0, T3, and T6 assessments ("study completers"). All analyses were conducted using SAS version 9 (SAS Institute). *P* values of less than .05 were considered statistically significant.

RESULTS

Of the 139 people who showed initial interest in the program, 110 consented to participate in the study. Of the 110 enrolled study participants, 12 participants ("program dropouts") either did not attend 9 sessions and/or complete the T3 surveys. Thus, 98 participants ("program completers") completed the T0 and T3 surveys and 85 participants ("study completers") completed the T0, T3, and T6 surveys. The 12 program dropouts attended an average of 6.7 sessions (4 of 12 [33.3%] completed at least 9 sessions). Program dropouts were more likely to be spouses or same-sex domestic partner (*P*=.02) and to have a higher baseline perceived stress level (average PSS score, 33.1 vs 27.1; *P*=.01) compared with program completers. Most study completers were female (88.2%), non-Hispanic white (94.1%), health care center employees (69.4%) who were 50 years (56.5%) of age or older (Table 2).

Statistically significant improvements from baseline (*P*<.001) were observed in all measured areas (Table 3). Among study completers, subjective happiness increased from an average of 4.6 at T0 to 5.4 at T3 (effect size, 0.62; average difference, 0.8; 95% CI, 0.5-1.0), and 5.5 at T6 (effect size, 0.84; average difference, 0.9; 95% CI, 0.6-1.0). Even larger improvements were seen in satisfaction with life, with effect sizes

TABLE 2. Demographic Characteristics^{a,b}

Characteristic	Program completers T0, T3 (N=98)	Study completers T0, T3, T6 (N=85) ^c
Age (y)		
20-29	5 (5.1)	5 (5.9)
30-39	18 (18.4)	16 (18.8)
40-49	21 (21.4)	16 (18.8)
50-59	27 (27.6)	25 (29.4)
60-69	24 (24.5)	20 (23.5)
70+	3 (3.1)	3 (3.5)
Sex		
Female	84 (85.7)	75 (88.2)
Male	14 (14.3)	10 (11.8)
Race		
Hispanic	1 (1.0)	0 (0)
Non-Hispanic white	92 (93.9)	80 (94.1)
Black or African American	1 (1.0)	1 (1.2)
Asian	2 (2.0)	2 (2.4)
American Indian or Alaskan Native	1 (1.0)	1 (1.2)
Not reported/choose not to disclose	1 (1.0)	1 (1.2)
Resilience or mindfulness class in past 5 y		
No training	39 (39.8)	30 (35.3)
At least 1 class reported	59 (60.2)	55 (64.7)
Membership status (medical center affiliation)		
Employee	70 (71.4)	59 (69.4)
Student	2 (2.0)	2 (2.4)
Retiree	5 (5.1)	4 (4.7)
Volunteer	7 (7.1)	7 (8.2)
Spouse or same-sex domestic partner	14 (14.3)	13 (15.3)

^aT0 = baseline; T3 = 3 mo at the end of intervention; T6 = 6 mo at the postintervention follow-up.

^bValues are presented as No. (percentage) of participants.

^cThe study completers (with all 3 time points at T0, T3, and T6) are a subset of the program completers (2 time points complete at T0 and T3).

TABLE 3. Happiness, Life Satisfaction, and Gratitude^a

Assessment tool	Program completers (N=98)			Study completers (N=85)				
	T0	T3	Effect size ^b	T0	T3	Effect size ^b	T6	Effect size ^b
	Mean ± SD	Mean ± SD		Mean ± SD	Mean ± SD		Mean ± SD	
Subjective happiness	4.5±1.3	5.2±1.3	0.65	4.6±1.2	5.4±1.2	0.62	5.5±1.0	0.84
Satisfaction with life	22.4±7.2	26.1±7.0	0.66	22.8±7.1	26.4±6.9	0.65	27.5±5.7	0.9
Gratitude	35.2±6.2	38.5±5.0	0.54	35.8±5.6	38.6±5.1	0.52	39.3±3.8	0.85

^aT0 = baseline; T3 = 3 mo at the end of intervention; T6 = 6 mo at the postintervention follow-up.

^bEffect size calculated as the difference in absolute value from baseline divided by the SD of the paired differences. *P* values for comparison to baseline among both groups were all <.001.

of 0.65 and 0.90 for T3 and T6, respectively (averages, 22.8 to 26.4 to 27.5 at each time point; average difference at T3, 3.6 [95% CI, 2.5-4.9]; average difference at T6, 4.7 [95% CI, 3.6-5.9]). Significant improvements in gratitude were also observed with effect sizes of 0.52 and 0.85 (averages, 35.8 to 38.6 to 39.3 for each time point; average difference at T3, 2.8 [95% CI, 1.6-4.1]; average difference at T6, 3.5 [95% CI, 2.6-4.5]). Similar effect sizes from T0 to T3 were also observed among the program completers (Table 3). In addition, significant improvements were observed for the outcomes of mindfulness, spirituality, and stress, both for program completers and for study completers. The percentage of study completers with high stress decreased from 97.6% at T0 to 81.2% at T3, and to 67.1% at T6 (*P*<.001) (Table 4).

A subset analysis including only the participants currently active in health care (N=79:

employees, volunteers, and students) showed similar relevant outcomes and effect sizes for all the measures tested.

DISCUSSION

Burnout, high stress, and job strain are increasingly prevalent and problematic in health care workers, yet the current options to treat stress are not satisfactory. This study demonstrates that a 12-week in-person stress management and resilience intervention led to a statistically important and clinically meaningful improvement in happiness, satisfaction with life, and gratitude in health care workers. Participants also had substantial improvements in mindfulness, spirituality, and stress. Furthermore, the program had a low dropout rate, suggesting high engagement among the participants, a surrogate measure of efficacy.⁵⁴

Improvements in happiness have been associated with improvements in other

TABLE 4. Mindfulness, Spirituality, Perceived Stress^a

Assessment tool	Program completers (N=98)			Study completers (N=85)				
	T0	T3	Effect size ^b	T0	T3	Effect size ^b	T6	Effect size ^b
	Mean ± SD	Mean ± SD		Mean ± SD	Mean ± SD		Mean ± SD	
Mindful Attention Awareness Scale	3.4±0.8	4.1±0.8	1.02	3.5±0.8	4.2±0.8	0.98	4.2±0.8	1.04
FACIT-Sp 12								
Overall	28.7±8.6	35.8±8.7	1.06	29.9±8.2	36.8±8.2	1.03	37.4±7.9	1.02
Peace	7.9±3.3	11.1±3.5	1.06	8.3±3.3	11.5±3.5	1.06	11.8±3.1	1.07
Meaning	11.9±3.1	13.7±2.9	0.68	12.2±3.0	13.9±2.5	0.67	13.9±2.4	0.65
Faith	9.0±4.3	11.0±4.2	0.67	9.5±4.1	11.4±4.1	0.68	11.8±4.0	0.73
Perceived Stress Scale-14								
High stress (≥14), No. (%)	96 (98.0)	82 (83.7)	NA	83 (97.6)	69 (81.2)	NA	57 (67.1)	NA
Low stress (<14), No. (%)	2 (2.0)	16 (16.3)		2 (2.4)	16 (18.8)		28 (32.9)	

^aFACIT-Sp 12 = Functional Assessment of Chronic Illness Therapy - Spiritual Well-Being; NA = not available/applicable.

^bEffect size calculated as the difference in absolute value from baseline divided by the SD of the paired differences. *P* values for comparison to baseline among postprogram completers were all <.001; *P* values for comparison to baseline among study completers were all <.001.

wellness-related domains. Thus, previous studies have shown the positive impact of wellness programs on employee happiness using the following interventions: positive psychology training,⁵⁵ combining team-based worksite health promotion and digital technologies,⁵⁶ and Web-based happiness training.⁵⁷

A number of mechanisms used in the intervention may have accounted for this improvement in happiness, including enhanced mindfulness,⁵⁸ gratitude,^{45,46} compassion,⁴⁷ acceptance,^{48,49} meaning,⁵⁰ and forgiveness.^{35,51-53} However, we did not explore the mechanism of increasing happiness in this study.

Happiness at the workplace is associated with employee well-being and engagement,⁵⁹ improved corporate functioning, and improved work performance.^{2,3} Hence, the benefit of fostering employee happiness goes beyond individual well-being to the overall organization.⁴ For these reasons, implementation of stress management and resilience programs to foster employee well-being should be part of a comprehensive strategy addressing the system-based issues contributing to stress and burnout.⁶⁰⁻⁶²

This study has several important limitations. First, causative statements cannot be made because of the single-arm clinical study design lacking randomization, blinding, and allocation concealment. Second, all participants had self-selected to participate in SMART and many participants had previous mindfulness experience. Consequently, how the results may apply to those with limited interest or mindfulness experience is unknown. Third, most participants were employed, female, and white. Therefore, how applicable SMART is to the underserved or minority populations is unknown. Fourth, higher stressed individuals were more likely to drop out, and further research is needed on providing short-term, effective interventions to highly stressed individuals. Fifth, information on program dropout was not collected to assess whether individuals' needs were being met or whether the participants were rapid responders and discontinued the program on the basis of achieving their goals. Sixth, all wellness center members, independent of work type, were participants. As a result, it is unknown from this study how to tailor interventions for specific subsets of health

care workers or for dependents. Future studies should include a robust study design, a larger and more representative sample, and a study of mechanistic factors to help establish a stronger cause-effect relationship.

CONCLUSION

Although the growing epidemic of stress and burnout among health care providers has been well documented, there has been limited investigation into how to improve positive psychological functioning in health care workers. Scalable, pragmatic, and effective programs are urgently needed. Our study provides novel, compelling data regarding one promising approach to improve happiness and several well-being measures in health care workers. Participants in the 12-week SMART program improved in several domains of positive functioning, including happiness, satisfaction with life, gratitude, mindfulness, spirituality, and stress. Based on findings from this study, further research is warranted using a large randomized trial to explore and identify effective strategies for enhancing positive functioning in health care workers.

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Abbreviations and Acronyms: PSS = Perceived Stress Scale; SHS = Subjective Happiness Survey; SMART = Stress Management and Resilience Training; T0 = baseline; T3 = 3 months at the end of intervention; T6 = 6 months at the postintervention follow-up

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