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ORIGINAL RESEARCH

Attitude of Gratitude: Evaluation of a Wellness Program to Improve Dispositional Gratitude Among Medical Students

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Abstract

Introduction: Medical students face significant mental health challenges as they matriculate through medical training. Research has emphasized the need for more interventions that promote physician trainee well-being and resilience during the early stages of training. Recent interventions have shown to be effective in promoting mental health and well-being; however, no interventions have examined the impact that daily gratitude practice, which is linked to increased well-being, may have on dispositional gratitude levels among medical students.

Methods: In Spring 2019, medical students at the University of South Florida were invited to participate in a gratitude program. Participants logged three good things that happened to them each day, for a period of 30 days. Their dispositional gratitude levels were assessed using the short-form Gratitude Resentment and Application Test (GRAT) before and after the 30-day intervention. Participant demographics and changes in GRAT scores from baseline to follow-up were examined.

Results: Forty-six medical students volunteered to participate in a short-term, gratitude-focused wellness program. Overall levels of dispositional gratitude increased significantly among medical students ($p<.001$). While a significant increase in GRAT score was found among the thirty-five female participants ($p<.001$), no significant change was found among the eleven male participants ($p=.154$). GRAT scores increased significantly among both first- and second-year medical students ($p=.001$). However, no significant increases were reported among third- and fourth-year students ($p=.109$). GRAT scores increased significantly regardless of whether students used a tool to practice gratitude at baseline.

Conclusion: Our results demonstrate that a 30-day gratitude practice program can improve dispositional gratitude among medical students, particularly among female students and pre-clinical students in years one and two.

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INTRODUCTION

The severe mental health crisis among physician trainees calls for action. Nearly half of all medical students and resident physicians report symptoms of burnout during their educational training [1]. Medical students enter training with similar or better mental health than their matched peers; however, as they matriculate through medical training, mental health deteriorates significantly [2]. Physician trainees who experience burnout are significantly more likely to experience anxiety, depression, and suicidal ideation [3]. Despite high rates of mental illness among this community, physicians and physician trainees continue to suffer in silence [4]. Lack of resources, support, and stigma continue to serve as barriers to mental health support among this population [4].

The negative impact that medical education has on a student's well-being highlights the need for change. Evidence suggests that interventions to promote well-being among physicians and physician trainees should be implemented during the early years of medical training [5]. Recent studies of medical student mental health emphasize the need for more interventions that strengthen resilience and improve mental health among medical students and physician trainees [6, 7]. Previous studies have found short-term, voluntary wellness interventions to be effective in improving medical student mental health and overall well-being using techniques such as mindfulness and other stress-reduction practices [8-11].

Literature on gratitude has highlighted the positive effects that gratitude practice can have on an individual's mental health and overall well-being [12]. Higher levels of gratitude are associated with increased levels of resilience and well-being [12]. While an overwhelming body of research shows that we feel negative emotions longer and often more intensely than positive emotions, we can train our brains to become more positive [13]. By regularly practicing gratitude, our brains begin to notice more positive aspects of our lives, leaving us happier and healthier [14]. Furthermore, gratitude builds resiliency, which allows us to better handle the negative situations that come our way [13].

A number of techniques and strategies increase gratitude among a variety of populations [12,15]. In a 2017 randomized control trial [16], participants who completed a daily gratitude exercise showed greater increases in gratitude levels and positive affect after three weeks, compared to the control group, who did not complete the gratitude exercise. In a 2005 study [15], participants who logged 3 good things each night for one month began to show increased levels of happiness, and lower levels of depressive feelings. To date, no short-term wellness interventions that incorporate daily gratitude exercises have been studied among the medical student population. Gratitude exercises, such as the "3 good things" exercise, require minimal time to complete, making them ideal for busy medical students.

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In response to the need for action during this mental health crisis, we designed a 30-day gratitude-focused wellness program for medical students. Our objective was to assess the effectiveness of the intervention on increasing dispositional gratitude among medical students.

METHODS

Participants

Approximately 600 USF Health medical students were invited to participate in a 30-day voluntary wellness program. All students received an email in Spring of 2019 inviting them to participate. Interested students could click on a link in the email to receive more information and to enroll.

Procedure

Students who elected to participate in the intervention, titled "Attitude of Gratitude: 3 Good Things Challenge" were instructed to log three good things that happened to them each day, for a period of 30 consecutive days. Participants could log their three good things each day using one of three platforms: 1) '3 Good Things' Apple mobile application; 2) 'Delightful Gratitude Journal' Google application; or 3) a Qualtrics survey form online. At the end of the 30-day program, participants received an email instructing them to upload a screenshot of their calendar activity to a Qualtrics survey form. The program administrator reviewed screenshots to confirm challenge completion. The project team consulted with the University's Institutional Review Board (IRB) and due to the nature of the project as a program evaluation, the project did not require approval by the University's IRB.

Measures

The Short Form Gratitude Resentment and Appreciation Test (GRAT), developed by Watkins, Woodward, Stone & Kolts [12], was used to assess gratitude levels before and after the 30-day wellness program. The GRAT scale is designed to assess dispositional gratitude, which refers to the tendency to notice and appreciate positive aspects of life. Higher levels of dispositional gratitude, as measured by the GRAT, are associated with higher levels of subjective wellbeing [12]. The short form GRAT scale, made up of sixteen items, assesses the three distinct characteristics of dispositional gratitude: (a) Lack of a Sense of Deprivation (LOSD) – or one's sense of abundance, (b) Simple Appreciation (SA) –the tendency to appreciate simple pleasures, and (c) Appreciation for Others (AO) –the tendency to appreciate others for their contributions and to express this sense of gratitude towards them [12]. Respondents are instructed to provide feelings and beliefs, using a 9-point Likert scale ranging from strongly disagree (1) to strongly agree (9) [12]. After reverse scoring five negatively formulated items, the total GRAT score ranges from 16-144. Higher total scores indicate higher levels of dispositional gratitude [12]. The GRAT scale has shown good internal consistency, factorial validity, construct validity, and temporal stability [12].

In this intervention, the GRAT scale was shortened from 16-items to 15-items due to the elimination of one question which assessed participants' level of enjoyment when watching the leaves change color each year. Due to the geographic location of this intervention (Tampa, FL, USA), this item was omitted. With fifteen items, the GRAT score range was 15-135. A reliability analysis was conducted on the LOSD, SA, and AO scales comprising of six, five, and four items, respectively. Cronbach's alpha showed the survey to reach acceptable reliability, with a range of .69 to .90.

The GRAT scale was administered at baseline when students enrolled in the 30-day challenge. At the completion of the intervention, the GRAT scale was administered again. The GRAT scale administered in this evaluation is shown in **Appendix A (see attached)**.

Statistical Analyses

Descriptive statistics were used to summarize participant demographics (frequency and percentage). Change in GRAT scores from baseline to follow-up was assessed using the Wilcoxon-signed rank test. All analyses were done using IBM SPSS version 26. Significance levels were set at 5%.

RESULTS

Study Participants

Participant demographics are summarized in **Table 1**. Eighty-two students enrolled in the wellness program. Forty-six students completed the 30-day program and were included in the evaluation. Thirty-five female students (76.1%) and eleven male students (23.9%) participated. Thirty-seven students were first- or second-year medical students (pre-clinical), making up most of the sample (80.4%). Most participants (80.4%) indicated not using a tool to practice gratitude at the time of enrollment.

Table 1: Demographics of study population

Demographic	n (%)
Gender	
Male	11 (23.9%)
Female	35 (76.1%)
Year of medical school	
Pre-clinical	37 (80.4%)
Clinical	9 (19.6%)
Current use of gratitude tool	
Yes	9 (19.6%)
No	37 (80.4%)

Gratitude Scores at Baseline and Follow-Up Overall Sample

Table 2 (next page) shows median participant GRAT scores at baseline and follow-up. GRAT scores increased significantly among participants overall ($p<.001$). The overall median GRAT score at baseline was 110. At follow-up, the median GRAT score increased by eight points, raising it to 118. There was a statistically significant increase in the SA ($p=.006$) and AO ($p=.001$) subscale scores among participants overall. However, there was no significant change in the LOSD subscale score among participants overall ($p=.159$).

Use of Gratitude Tool at Baseline

The median GRAT score increased significantly by 13 points among the nine students who were already using a gratitude tool at baseline ($p=.018$), as shown in Table 2. The median AO subscale score increased significantly by five points ($p=.044$). Non-significant changes were reported for the LOSD ($p=.110$) and SA ($p=.139$) subscale scores.

The median GRAT score also increased, by 8 points, among the remaining thirty-seven students who were not using a gratitude tool at baseline ($p=.003$), as shown in Table 2. There was a statistically significant increase in the SA ($p=.019$) and AO ($p=.013$) subscale scores. However, there was no change in the LOSD characteristic among this group ($p=.410$).

Table 2: Median gratitude scores at baseline and follow-up, overall and by GRAT subscale

	Pre-score	*Post-score*	*P-value*
Overall *(n=46)*	110 (99.5-118.5)	118 (108.75-124.5)	<.001
LOSD	45.5 (39.75-49.0)	46.0 (38.75-51.25)	.159
SA	37.5 (31.25-42.25)	40.0 (36.0-44.0)	.006
AO	30.5 (25.0-33.0)	33.0 (29.0-36.0)	.001
Current use of gratitude tool			
Yes *(n=9)*	113.0 (100.0-119.0)	126.0 (114.0-130.5)	.018
LOSD	47.0 (42.0-49.5)	49.0 (46.5-52.5)	.110
SA	37.0 (29.0-43.0)	41.0 (34.5-44.5)	.139
AO	30.0 (22.0-32.5)	35.0 (29.0-36.0)	.044
No *(n=37)*	109.0 (99.0-120.0)	117.0 (106.0-123.5)	.003
LOSD	45.0 (37.0-49.0)	45.0 (38.0-50.5)	.410
SA	38.0 (30.5-42.5)	39.0 (36.5-43.5)	.019
AO	31.0 (25.5-33.5)	32.0 (28.5-36.0)	.013

LOSD: Lack of Sense of Deprivation SA: Simple Appreciation; AO: Appreciation of Others

Table 3 shows median participant GRAT scores at baseline and follow-up for all forty-six participants, stratified by gender and year of medical school. Among the thirty-five female participants, the median GRAT score increased significantly by nine points (p<.001). The median GRAT score decreased by one point among the 11 male participants; however, this change was not significant (p=.154).

There was a significant increase in median GRAT scores among the 37 pre-clinical students. From baseline to follow-up, the median GRAT score increased by 8 points (p=.001) among this group of students. Enrollment was very low among clinical students, and while the median GRAT score increased by 10 points, this change was not significant (p=.109).

Table 3: Median gratitude scores at baseline and follow-up by gender and year of medical school

	Pre-score	*Post-score*	*P-value*
Gender			
Male	115.0 (104.0-118.0)	114.0 (112.0-124.0)	.154
Female	109.0 (96.0-122.0)	118.0 (108.0-126.0)	<.001
Year of medical school			
Pre-clinical	110.0 (97.0-119.0)	118.0 (108.5-125.0)	.001
Clinical	110.0 (105.5-120.0)	120.0 (108.0-125.0)	.109

DISCUSSION

Our intervention suggests that a 30-day gratitude reflection program can improve dispositional gratitude among medical students, particularly among female students and pre-clinical students in years one and two. Levels of dispositional gratitude increased significantly among medical students overall after a 30-day period of logging three good things that happened to them daily. Results from this program are consistent with previous findings that show an association between daily gratitude practice and short-term increases in levels of dispositional gratitude and overall well-being in other populations. To address the growing concern of mental health among physicians and physician trainees, evidence suggests that effective wellness programs be implemented during the early stages of medical training [5]. Our intervention, which was designed and implemented for undergraduate medical students, showed significant increases in dispositional gratitude among this particular population.

While significant increases in median GRAT scores were reported among participants overall, and regardless of whether they were already using a tool to practice gratitude at baseline, there were differences in GRAT subscale scores. The AO subscale increased significantly overall and among both users and non-users of a gratitude tool at baseline. On the contrary, there was no change in the LOSD subscale scores from baseline to follow-up among any group. The SA subscale increased significantly among participants overall, and among participants who were not using a gratitude tool at baseline. This suggests that while this intervention was successful in improving overall levels of dispositional gratitude, including improved appreciation for others, it was not successful in improving participants' sense of abundance (LOSD). Furthermore, there was a significant increase in the SA subscale score among participants who were not using a gratitude tool a baseline. The SA subscale also increased among participants who were already using a tool to practice gratitude at baseline, yet this change was not significant (p=.139), and the sample size was low (n=9). Thus, this practice of daily gratitude reflection may improve a medical student's tendency to appreciate and express gratitude towards others if they are not already practicing gratitude in other ways. To improve GRAT subscale scores, future interventions may benefit from instructing students to log one good thing for each of the three domains: SA, AO, and LOSD.

Significant changes in dispositional gratitude were not present among male or clinical students (years three and four), however it is important to note that participation was very low among both groups. Males comprise 53% of the USF Health Morsani College of Medicine MD student population, yet the majority of program participants (76.1%) were female. The low participation rate among males is consistent with previous studies showing significantly lower levels of self-care practice among male medical students compared to female medical students [17]. The low participation among clinical students, enrolled in years three and four, is consistent with previous studies that find lower participation in extracurricular programs among third- and fourth-year students due to the increased time spent in clinical-related activities [18]. Moving forward, interventions may benefit from targeted marketing approaches that increase male student participation, and participation among third- and fourth-year students in wellness programming. In this pilot project, participants were invited via email. Utilizing in-person recruitment techniques may increase students' knowledge about the program.

LIMITATIONS

The relatively small sample size, including low representation from males and students in their clinical years (third and fourth year) is noted as a limitation and may have affected results. Additionally, this evaluation utilized self-reported data which is considered a limitation as respondents may have selected responses that they believed to be more socially acceptable, rather than being truthful. Since students could self-enroll in this program, selection bias may have occurred due to the voluntary nature of the program. Furthermore, because this intervention only included one medical school, results may not be generalizable to other medical schools. Despite these limitations, this evaluation does provide evidence that delivering gratitude-focused interventions can have a positive effect on levels of dispositional gratitude among medical students.

CONCLUSION

As medical education continues to focus on student well-being and improving mental health, wellness interventions, such as the "Attitude of Gratitude: 3 Good Things Challenge," should be considered for improving dispositional gratitude, which has been linked to improved well-being. Additional follow-up can determine how short-term gratitude practices influence well-being over longer periods of time. Additionally, future interventions should be analyzed with mental health data in order to assess whether interventions are effective in improving mental health conditions, which are currently shown to worsen as students matriculate through training.

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OPINION QUESTIONNAIRE

Please provide your honest feelings and beliefs about the following statements which relate to you. There are no right or wrong answers to these statements.

1	2	3	4	5	6	7	8	9
I strongly disagree		I disagree somewhat		I feel neutral about the statement		I mostly agree with the statement		I strongly agree with the statement

_____ 1. I couldn't have gotten where I am today without the help of many people.

_____ 2. Life has been good to me.

_____ 3. There never seems to be enough to go around and I never seem to get my share.

_____ 4. Oftentimes I have been overwhelmed at the beauty of nature.

_____ 5. Although I think it's important to feel good about your accomplishments, I think that it's also important to remember how others have contributed to my accomplishments.

_____ 6. I really don't think that I've gotten all the good things that I deserve in life.

_____ 7. Although I'm basically in control of my life, I can't help but think about all those who have supported me and helped me along the way.

_____ 8. I think that it's important to "Stop and smell the roses."

_____ 9. More bad things have happened to me in my life than I deserve.

_____ 10. Because of what I've gone through in my life, I really feel like the world owes me something.

_____ 11. I think that it's important to pause often to "count my blessings."

_____ 12. I think it's important to enjoy the simple things in life.

_____ 13. I feel deeply appreciative for the things others have done for me in my life.

_____ 14. For some reason I don't seem to get the advantages that others get.

_____ 15. I think it's important to appreciate each day that you are alive.