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Workshop-based intervention to improve dispositional optimism and decision-making in graduate medical education

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ABSTRACT

Burnout, stress, and maladaptive decision-making are prevalent in medical education and negatively impact trainee well-being and performance. Dispositional optimism has been associated with improved psychological outcomes, yet its role in graduate medical education (GME) remains underexplored. This study aimed to examine the association between optimism, decision-making styles, stress, and burnout, and to evaluate the feasibility of an optimism-focused workshop. A retrospective cross-sectional analysis was conducted using data from 209 participants, including students, residents, and faculty, who attended an interactive workshop between 2022 and 2024. Validated instruments included the life orientation test-revised (LOT-R), perceived stress scale (PSS), decision-making styles questionnaire, and a single-item burnout measure. Statistical analyses included t-tests, Chi-square tests, and Spearman correlations ($p<0.05$). High optimism was reported in 19.2% of participants, while 31.4% had low optimism; 7.4% reported high stress and 14.1% high burnout. Higher optimism was significantly associated with lower stress ($r=-0.38$, $p<0.001$), lower burnout ($r=-0.25$, $p=0.02$), and reduced doubtfulness decision-making ($r=-0.17$, $p=0.039$). Participants with high optimism had significantly lower stress ($p=0.013$) and burnout ($p=0.014$). Faculty demonstrated higher procrastination ($p=0.03$), but lower stress ($p=0.008$) compared to learners, and participants born outside the United States had higher burnout ($p=0.04$). The workshop was highly rated (mean=4.33/5). Optimism is associated with improved well-being and decision-making, and optimism-focused workshops may be a feasible intervention to reduce burnout and enhance resilience in medical education.

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1. INTRODUCTION

Burnout, stress, and impaired decision-making are increasingly recognized as critical challenges in medical education, negatively affecting both trainee well-being and clinical performance [1]−[4]. High rates of psychological distress, including depression and burnout, have been widely reported among medical

students, residents, and physicians, affecting patient outcomes underscoring the need for effective and scalable interventions to support resilience and well-being in these groups. Optimism has been well studied as a key variable that mitigates negative outcomes mainly in psychological circles, but not much research exists regarding optimism and its effects in medical education. Optimism is defined as the tendency to expect generally positive outcomes and to believe that difficult or stressful circumstances can improve over time. Optimistic people are physically healthier with reduced coronary artery disease, depression, anxiety, exert more effort, have more internal locus of control, whereas pessimistic individuals withdraw from their efforts and are less successful in coping with challenging situations [5]–[9]. Dispositional optimism can also influence decision making styles. Decision making styles are dominant patterns in how an individual addresses a predicament or choice based on personal tendencies. Magnano *et al*. [5] classified four main decision-making styles for vocational or career guidance which include: doubtfulness, delegation, procrastination, and no problem. Doubtfulness, procrastination, and delegation are considered ineffective, and "no problem" is considered an effective decision-making style.

In education, optimism and decision-making styles are important to the success and prosperity of a career where effective decision-making and resilience are essential for success and well-being [10], [11]. However, there is limited data regarding optimism, especially how dispositional optimism influences decision-making styles, stress, and burnout within graduate medical education (GME) contexts. Furthermore, few studies have evaluated educational interventions designed to promote optimism among medical learners. Therefore, empirical evidence on integrating optimism-based training into medical education curricula remains limited. To address this gap, this study aims to examine the relationships between dispositional optimism, decision-making styles, stress, and burnout among learners and faculty in medical education, and to evaluate the feasibility and perceived effectiveness of an optimism-focused educational workshop. We hypothesize that higher optimism will be associated with lower stress and burnout and with greater use of adaptive decision-making styles.

2. METHOD

2.1. Study design

This study is a retrospective cross sectional design using survey data collected during multiple optimism focused workshops conducted between May 2022 and December 2024. Data was accessed on December 20, 2024, for investigation and assessment.

2.2. Participants

The target population consisted of high school students, college students, medical students, physician residents, and faculty. A total of 209 participants were included. Participation was voluntary and had no impact on learners' academic or professional standing.

2.3. Workshop intervention

The lead author developed this workshop to meet the Accreditation Council for Graduate Medical Education (ACGME) requirements of professionalism. Residents must demonstrate competence in recognizing and developing a plan to support their own personal and professional well-being. To develop this curriculum, Kern's six-step approach to curriculum development was utilized [12]. Kern's six step approach includes: i) step 1 (problem identification and general needs assessment) was addressed in the introduction; ii) step 2 (targeted needs assessment) involved a review of medical education learner and faculty development curricula, which identified a gap in educational content related to dispositional optimism and wellness; iii) step 3 (goals and objectives) is described in the final section of the introduction; iv) step 4 (educational strategies) focused on actively engaging learners in developing an understanding of dispositional optimism, decision-making styles, and wellness principles. This included the use of self-reflective exercises and self-assessments in real time during sessions. The curriculum followed a "situated learning guided participation" model, combining didactic and interactive activities to support independent learning [13]; and v) step 5 (implementation-the workshop length) was approximately 90 minutes to implement. The workshop was low cost and easy to implement. Preparation for the workshop took about four hours and was conducted by the lead author and three residents trained by the lead author who served as co-presenters.

2.4. Instruments

Validated instruments were used to assess key study variables. Dispositional optimism was measured using the life orientation test-revised (LOT-R) [14]. Decision-making styles were assessed using the QSD questionnaire [9], and perceived stress was measured using the perceived stress scale (PSS) [15]. Burnout was assessed using a validated single-item burnout measure [16], [17]. For decision-making styles, the highest quartile was categorized as high for each style. Individual scores on the PSS range from 0 to 40, with higher scores indicating greater perceived stress. Scores of 0–13 are categorized as low perceived stress,

scores of 14–26 as moderate perceived stress, and scores of 27–40 as high perceived stress. The workshop included a debriefing session and facilitated group reflection on individual and aggregate PSS results; presentation on dispositional optimism, decision-making styles, cognitive distortions, cognitive reframing, and acceptance-based approaches to enhancing well-being; the best possible self activity [18]–[20]; and evaluation and feedback. Participants completed pre- and post-surveys immediately following the educational workshop to assess short-term learning gains, with individual pre- and post-survey outcomes compared to measure improvement

2.5. Data analysis

Statistical analysis was performed using Spearman's rank correlation coefficient to calculate rho. The Chi-square test was used for discrete variables, and student's *t*-test was used for continuous variables, with calculation of 95% confidence intervals and odds ratios as indicated. A *p*-value of <0.05 was considered statistically significant. Analyses were performed using SPSS version 27.0 (IBM Corp, Armonk, New York). Not everyone answered every survey question. For each outcome, we only analyzed the responses from participants who completed that specific set of questions. The percentages shown in the tables are based on the number of people who answered each survey, not the total number of participants in the study. We did not fill in or estimate any missing answers. It is possible that the missing responses could affect the results if certain groups of people were more likely to skip questions. However, based on the information we have, we did not see any clear demographic patterns suggesting that missing responses were systematic. We discuss the potential impact of missing data in more detail in the limitations section.

3. RESULTS

From May 2022 to December 2024, a total of 209 participants were included, consisting of students, residents, and faculty. Most participants reported moderate optimism, while approximately one-third demonstrated low optimism. The majority also reported moderate stress, with a smaller proportion experiencing high burnout, as shown in Table 1.

Table 1. Prevalence of optimism, wellness and decision-making styles (n=209)

Categories		n	%	Categories		n	%
Birthplace categories	Non-US	25	16	Stress categories	Low stress	27	28.7
	Born in US	132	84		Moderate stress	60	63.8
	Total	157	100		High perceived stress	7	7.4
	Missing	52			Total	94	100
	Total	209			Missing	115	
Academic positions	Faculty	37	17.7		Total	209	
	Residents	43	20.6	Burnout categories	Low burnout	79	85.9
	Medical students	64	30.6		High burnout	13	14.1
	College/gap year students	60	28.7		Total	92	100
	High school students	3	1.4		Missing	117	
	Other	2	1		Total	209	
	Total	209	100	Decision making styles		n*	%
Race categories	Asian	44	26.7		High no problem	156	20.5
	White	54	32.7		High doubtfulness	167	21.6
	Latinx	30	18.2		High delegation	165	28.5
	Black	33	20		High procrastination	167	24.6
	Multiracial	4	2.4				
	Total	165	100				
	Missing	44					
	Total	209					
Optimism categories	Low optimism (high pessimism)	54	31.4				
	Moderate optimism	85	49.4				
	High optimism (low pessimism)	33	19.2				
	Total	172	100				
	Missing	37					
	Total	209					

Legend: US=United States; N=number; %=total percentage of cases based on completed results excluding missing cases; Decision making styles: n*=completed results excluding missing cases for each row; Doubtfulness=worry, anxiety, negative emotions, and uncertainty regarding decisions.; Delegation=reliance on others for decisions; dependent/avoidant style with an external locus of control; Procrastination=tendency to avoid or delay the decision-making process; No problem=effective decision-making characterized by goal setting, planning, information, seeking, and careful evaluation without negative emotions; Gap year students=students who have obtained a college degree and are taking year(s) off before submitting a medical school application.

Mean age increased significantly across academic levels (p<0.001), ranging from 21.85 years among college students to 42.33 years among faculty. Decision-making styles varied by academic position, with faculty demonstrating lower "no problem" scores (p=0.018) and higher procrastination scores (p=0.03) compared to learners. College students demonstrated higher delegation scores compared to medical students (p=0.039). Faculty also reported significantly lower stress scores compared to medical and college students (p=0.008). Participants born outside the United States had significantly higher burnout rates compared to those born in the United States (p=0.04), as shown in Table 2.

Higher optimism was significantly associated with lower stress (r=−0.38, p<0.001), lower burnout (r=−0.25, p=0.02), and reduced use of doubtfulness decision-making (r=−0.17, p=0.039). Participants with high optimism demonstrated significantly lower stress (p=0.013) and burnout (p=0.014) compared to those with lower optimism. Similarly, lower burnout was associated with reduced procrastination (p=0.039) and doubtfulness (p=0.003), as well as higher optimism scores (p=0.011), as shown in Table 3. Significant correlations were observed between burnout and stress (r=0.361, p<0.001) and between maladaptive decision-making styles, including doubtfulness, procrastination, and delegation (p<0.001), as shown in Table 4. Participants overall rated the value of the workshop as 4.33 on a scale to 5.

Table 2. Significant associations between demographic factors with decision-making styles, wellness and optimism

Variables	College students	Med students	Residents	Faculty	p value
Age years*	21.85 (3.88)	25.59 (2.93)	29.41 (2.45)	42.33 (5.12)	<0.001
No. Problem score *	11.16 (1.89)	11.84 (1.49)	11.12 (1.62)	10.29 (2.85)	0.018
Delegation score *	10.37 (3.5)	8.48 (2.88)	9.68 (3.12)	9.36 (3.94)	0.039
High delegation***	23 (45.1%)	6 (13.6%)	10 (25%)	6 (24%)	0.007
Procrastination score**		10.33 (3.24)		12.12 (3.33)	0.03
Stress score**		17.89 (7.39)		13.67 (3.94)	0.025
Stress score**	17.78 (5.43)			13.67 (3.94)	0.008
Variables	Asian	White	Latinx	Black	p value
Age years*	27.11 (3.8)	27.9 (6.0)	26.0 (6.0)	20.9 (3.7)	<0.001
Variables	Non-USA born	USA born			p value
Burnout high ***	4 (33%)	6 (9%)			0.04

*=ANOVA; **=independent t-test; *** Chi square test; ( )=standard deviation (SD).

Table 3. Significant associations of dispositional optimism with wellness and decision-making styles

Variable	High optimism	Low/moderate optimism	P value*
Doubtfulness	10.41 (3.33)	11.70 (3.12)	0.034
Stress	13.63 (5.86)	17.73 (5.86)	0.013
Burnout	1.95 (0.62)	2.52 (0.94)	0.014
Variable	Low burnout	High burnout	P value
Stress score	16.03 (5.38)	21.85 (7.28)	0.015
Doubtfulness score	10.88 (3.30)	14.55 (3.08)	0.003
Procrastination score	10.76 (3.41)	12.18 (1.72)	0.039
Optimism score	16.11 (4.59)	13.25 (3.01)	0.011
Variable	Low stress	Moderate/high stress	P value
Burnout score	2.00 (0.68)	2.57 (0.96)	0.007
Optimism score	17.46 (4.26)	14.90 (4.43)	0.014

*=Student t-test used to calculate p-values.

Table 4. Significant correlations between optimism, decision making styles and wellness

Variable 1	Variable 2	Rho	P value*
Optimism	Stress	-0.38	<0.001
	Burnout	-0.25	0.02
	Doubtfulness	-0.17	0.039
Burnout	Stress	0.361	<0.001
	Doubtfulness	0.385	<0.001
Doubtfulness	Procrastination	0.671	<0.001
	No problem	-0.318	<0.001
	Delegation	0.613	<0.001

*Spearman's rank correlation coefficient was used to calculate the p-values.

4. DISCUSSION

The aim of this study was to assess the associations between dispositional optimism, decision-making styles and wellness factors, and to explore the feasibility of an optimism-focused workshop in GME curricula. Overall, the findings demonstrate that those with higher optimism scores were significantly less likely to use problematic decision-making styles such as doubtfulness and procrastination. Participants with

lower burnout also demonstrated reduced use of maladaptive decision-making styles, including procrastination and doubtfulness. The workshop was well received, supporting its feasibility as an educational intervention.

This is consistent with prior studies who demonstrated that individuals with higher levels of dispositional optimism exhibited a more adaptive decision-making style [5], [21]. An important finding in our study was that amongst this medical education cohort, higher optimism scores were significantly associated with lower stress and burnout scores. These findings are consistent with prior studies that support the concept that optimism encourages a resilient approach to challenges, with more problem-focused coping strategies and more effective ways of emotional regulation, both of which contribute to better functioning, reduced burnout and reduced levels of depression [22]−[24]. Optimistic individuals tend to view obstacles as challenges that can be overcome, which is particularly beneficial in the context of medical education, residency training and medical careers in which crucial decisions are made regularly, and one's outlook can have dire consequences if viewed in a pessimistic framework.

Our study also revealed some unique insights, particularly with respect to faculty and medical learners. Faculty members in our study exhibited significantly higher levels of procrastination, a negative decision-making style, and lower no problem scores, which is the adaptive decision-making styles yet reported lower levels of stress. It should be noted that other contributory factors including external (time, control) and internal (motivation, self-esteem, self-determination, perceived resources) variables affect the decision-making process [5]. Faculty, having completed their training and established their professional identities and roles, have more flexibility, more time, less pressure and fewer high stakes examinations in their decision-making, thus they may experience lower stress despite engaging in less adaptive decision-making behaviors. Learners, however, have ongoing stress from longitudinal time-prescribed challenges and obstacles of preparing for and doing well on homework, courses, clerkships, rotations, and especially passing high stakes standardized exams to obtain qualifying grades [25]. This implies that they cannot procrastinate, delegate or be doubtful in making decisions, but must use the no problem decision making stylet to define goals, to plan actions carefully to be successful. This is supported by studies that have shown that students who procrastinate achieve lower grades and GPA while students who use deep and strategic learning approaches tend to have higher GPAs [26], [27].

This study also demonstrated that procrastination and doubtful decision-making styles were significantly associated with high burnout. Previous studies have shown that procrastination is an ineffective coping mechanism that is associated with decreased psychological safety and additionally, procrastination has been associated with increased external locus of control, increased anxiety, low resilience, fixed mindset and reduced self-esteem [9], [26], [28], [29]. Given the epidemic of the high rates of stress and burnout in medical learners and medical providers especially after the COVID-19 pandemic, interventions based on improving dispositional optimism could facilitate the ability of medical learners and providers to cope with the emotional and cognitive demands of healthcare, to prevent burnout and mitigate stress [1], [30]. The study showed the positive potential impact of an optimism-focused workshop as an intervention in GME. The workshop, including the best possible self-activity and the optimistic mindset worksheet, involved group self-awareness, cognitive distortions, group activities, and practicing positive thinking/reframing practices. The workshop was rated highly by participants, with an average score of 4.33 out of 5 highlighting the perceived benefit of such a workshop.

This study has several limitations. First, the retrospective and cross-sectional design limits the ability to infer causal relationships between optimism and psychological outcomes. Second, the use of self-reported measures may introduce response bias. Third, missing data were present across several variables, which may affect the generalizability of the findings. Additionally, the study was conducted at a single institution using a convenience sample, which may limit external validity. Another limitation is that we did not include a control or comparison group, which makes it hard to determine the direct impact of the workshop itself. We also did not look at long-term outcomes, so we do not know whether any changes in optimism were sustained over time. Finally, we did not measure other factors that could play a role, such as personality traits, coping styles, prior mental health history, or institutional culture. These variables may also influence the relationships we observed. Future studies should look at whether the effects of optimism-focused workshops last over time. This could be done by following participants and repeating the surveys 6 and 12 months after the workshop. A stronger design would include surveys before the workshop, right after it, and then again months later. This would help determine whether changes in optimism, decision-making styles, stress, and burnout are sustained. Finally, future research could look beyond self-reported measures and examine real-world outcomes, such as academic performance, attendance, or clinical performance metrics. This would help determine whether psychological changes translate meaningful professional improvements.

5. CONCLUSION

In conclusion, those with higher optimism scores and low burnout scores were less likely to use problematic decision-making styles, were less stressed, and had less burnout. Our findings suggest that optimism-focused interventional workshops could be a key tool in GME that can aid in supporting learners' reduced stress and burnout rates as well as increasing positive decision-making styles and overall well-being. This workshop aims to enhance residents' resilience and overall well-being. It is easy to implement since a single faculty member can be trained to deliver it in under 4 hours, and the total faculty time commitment for preparation and presentation of the workshop is minimal (approximately 2 hours). The workshop itself may be assigned to 60-90 minutes duration which can be seamlessly integrated into existing GME didactic curricula. It is low cost, requires minimal infrastructure needs, and can be presented both in-person and virtually making it scalable and well-suited for broad implementation across GME programs. These dispositional optimism workshops can be incorporated into GME wellbeing curricula to support resilience and mitigate burnout.

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AUTHOR CONTRIBUTIONS STATEMENT

This journal uses the Contributor Roles Taxonomy (CRediT) to recognize individual author contributions, reduce authorship disputes, and facilitate collaboration.

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C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

CONFLICT OF INTEREST STATEMENT

Authors state no conflict of interest.

INFORMED CONSENT

We have obtained informed consent from all individuals included in this study.

ETHICAL APPROVAL

The study was approved by the Institutional Review Board of Arrowhead Regional Medical Center, protocol number 20–45. All minors and their parents/guardians signed a consent form that allowed them to participate in the study.

DATA AVAILABILITY

The authors confirm that the data supporting the findings of this study are available within the article in supplementary materials.

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