

Modeling Changes in Physician Health After Participation in the Leading Physician Well-Being Certificate Program

Elisabeth Callen, PhD, GStat¹, Tarin Clay, BA¹, Heather Woods, BA¹, Margot Savoy, MD, MPH, FAAFP, FABC, FAAPL, CPE, CMQ¹, Kat Istas, MPH¹, Natabhona Mabachi, PhD, MPH¹

¹American Academy of Family Physicians, 11400 Tomahawk Creek Parkway, Leawood, KS 66211

Abstract

The Leading Physician Well-Being Certificate Program at the American Academy of Family Physicians (AAFP) was started to train family physicians to become leaders in improving wellness in their practices. In addition to the webinars, discussions, conferences, individual reflections, and a quality improvement project, the participants were asked to complete evaluation surveys at the start, midway, and end of the program. In each survey, the participants were asked about their well-being, leadership style, quality improvement skills, organizational policies, and experienced discrimination. For the purposes of this analysis, we focused on leadership style: Adaptive Leadership Questionnaire. The AAFP Evaluation Team, with the goal to observe differences over time due to the program, completed a series of mixed effect regressions to determine the effect the program had on the participants. The AAFP Evaluation Team found that the program had a positive effect.

Key Words: Mixed Effect Regression, Physician Well-Being, Burnout, Quality Improvement

1. Introduction

Physician burnout is a major issue within healthcare (1) and continued to worsen with the COVID-19 pandemic (2). To help combat physician burnout and help with individual and organizational well-being, the American Academy of Family Physicians received a grant from the United Health Foundation to do just that (3). The Leading Physician Well-Being (LPW) Certificate Program at the AAFP was implemented to train family physicians to become leaders in improving well-being within their organization.

Cohort scholars completed a series of webinars, discussions, conferences, individual reflections, and a quality improvement project. Scholars can receive Continuing Medical Education (CME) credit for the work they do within the certificate. In addition to the curriculum requirements, the participants were asked to complete evaluation surveys covering a variety of topics including well-being, leadership, quality improvement, organizational structure, and experienced discrimination. For the purposes of this manuscript, we will focus on the leadership questions asked within the three evaluation surveys sent to the first cohort of scholars.

2. Methods

2.1 Evaluation Description

The LPW Certificate Program (funded by United Health Foundation, implemented by the American Academy of Family Physicians' [AAFP] Continuing Professional Development [CPD] Division, evaluated by the AAFP's Practice-Based Research, Innovation, and Evaluation Division [PRIED]) had its first cohort in 2021 (n = 110). An evaluation survey, consisting of several validated instruments, was distributed to the cohort in January 2021 (baseline), May-June 2021 (midway), and October 2021 (end). The surveys measured well-being, leadership skills, and practice improvement in each scholar's self, practice, and organization. The survey also included demographic questions such as the type of employer the scholars worked for and their practice type. Scholars were then asked on the midway and end surveys if they had changed jobs/workplaces.

For the purposes of this discussion, we will focus on one of the validated surveys we used in all three distribution points: the Adaptive Leadership Questionnaire (4). The Adaptive Leadership Questions consist of thirty questions that break down into six scores with five questions each. Each score has a highest possible value of 25. To calculate the scores, certain questions have to be reverse coded (4). An overview of the scores is as follows:

- “Maintain Disciplined Attention”: Helping people face issues/challenges.
- “Get on the Balcony”: Step back and see complexities of various situations.
- “Regulate Distress”: Provide safe environment to overcome issues and remain calm.
- “Identify the Adaptive Challenge”: Recognize and respond to challenges correctly.
- “Protect Leadership Voices from Below”: Open to low-status member contributions.
- “Give the Work Back to People”: Empowering others to solve their own programs.

Note that we will show no results from the Give the Work Back to People score.

2.2 Statistical Analyses

Descriptive statistics were completed for all variables. For the purposes of this paper, we completed a longitudinal analysis with Cross-Classified Mixed Effect Regressions with a Multi-Membership variable. Mixed Effect Regressions were used because we do have some missing data (not every scholar completed all three surveys) and it does not remove the entire record from analysis if missing data is present. For the Mixed Effect Regressions, the dependent variable was the score associated with the question that was included as the independent variable (this was included as a fixed effect). Time was also an independent variable and fixed effect. Within the model, we had clustering that occurred to the person and that was included as a random effect. The Multi-Membership variable was based on the question in the survey about changing jobs/workplaces. All started as “no” but changed to “yes” when they indicated they had changed jobs/workplaces (included as a random effect). However, the changing jobs/workplaces variable was included using a cross-classified specification.

3. Results

3.1 Demographics

For the first cohort of the LPW Certificate Program, the majority of the scholars were female (95, 88.8%) and White (58, 54.2%). The scholars were also, generally, younger

with the majority being born between 1981 and 1992 (88, 82.2%) and graduated residency between 2016 and 2022 (66, 61.7%). The scholars worked at a variety of employers including private non-profit system (43, 40.2%), federal, state, or local government, community board, etc. (17, 15.9%), and university owned (public or private) clinic or hospital (13, 12.1%). The scholars also worked in a variety of practice settings including primary care only (33, 30.8%), multi-specialty group (primary and specialty physicians) (22, 20.6%), academic practice (15, 14.0%), federally qualified health centers (FQHCs; 15, 14.0%), and other settings (15, 14.0%; see Table 1). The following results are mixed effect regressions, which include the effect of changing jobs/workplaces, that converged.

Table 1. Demographics of Cohort 1 Scholars (n = 107).

<i>Gender</i>			
Male	9, 8.4	Prefer to self-describe	2, 1.9
Female	95, 88.8	Prefer not to answer	1, 0.9
<i>Ethnicity (Select all that apply)</i>			
Caucasian	58, 54.2	South Asian	11, 10.3
Latinx/Hispanic	10, 9.3	East Asian	9, 8.4
Middle Eastern	1, 0.9	Mixed	5, 4.7
African	12, 11.2	Other	5, 4.7
Caribbean	1, 0.9	Prefer not to answer	6, 5.6
<i>Race (Select one)</i>			
American Indian/Alaskan Native	0, 0.0	White	58, 54.2
Native Hawaiian/Other Pacific Islander	1, 0.9	Multiracial	4, 3.7
Asian	19, 17.8	Other	2, 1.9
Black or African American	18, 16.8	Prefer not to answer	5, 4.7
<i>Year of Birth</i>			
1966-1980	19, 17.8	1981-1992	88, 82.2
<i>Year Graduated from Residency</i>			
2005-2015	41, 38.3	2016-2022	66, 61.7
<i>Primary Employer</i>			
You (self-employed, majority practice owner, independent contractor, etc.)	1, 0.9	Managed care organization or insurance company	5, 4.7
Physician group (single- or multi-specialty)	15, 4.0	Federal, state or local government, community board, etc.	17, 15.9
University-owned (public or private) clinic or hospital	13, 12.1	Locum tenens group/staffing organization	1, 0.9
Private for-profit system	3, 2.8	Medical school	3, 2.8
Private non-profit system	43, 40.2	Other	6, 5.6
<i>Practice Description (Select all that apply)</i>			
Primary Care only	33, 30.8	Integrated Health	7, 6.5
Multi-Specialty Group (primary and specialty physicians)	22, 20.6	Community Health Center (CHC)	4, 3.7
Academic Practice	15, 14.0	Rural Health Clinic	3, 2.8
Academic Center-Based Residency Program	13, 12.1	Federally Qualified Health Center (FQHC)	15, 14.0
Community-Based Residency Program	13, 12.1	Federally Qualified Health Center Look Alike (FQHC LA)	4, 3.7
Fellowship Program	1, 0.9	Other	15, 14.0
Affiliated with Academic Medical Center	13, 12.1		

3.2 Adaptive Leadership Questionnaire

3.2.1 Maintain Disciplined Attention

Three questions from the “Maintain Disciplined Attention” score (4) produced mixed effect models:

- Q1: During organization change, I challenge people to concentrate on the “hot” topics.
- Q2: I thrive on helping people find new ways of coping with organizational problems.
- Q3: In an effort to keep things moving forward, I let people avoid issues that are troublesome.

For Q1 and Q2, contributions from these questions improved over time and these questions contributed positively to the overall “Maintain Disciplined Attention” score (Q1: 95% CI: [1.04, 1.62]; Q2: 95% CI: [1.14, 1.69]) with the effects of the person and job change accounted for within the model. For Q3, contributions from this question also improved over time and this question had to be reverse coded to contribute positively to the score (Q3: 95% CI: [-1.86, -1.44]; see Table 2) with the effects of the person and job change accounted for within the model. In the combined model, only Q1 and Q2 were used because Q3 was not allowing the model to converge. The direction of the contributions from Q1 and Q2 were the same in the combined model with the effects of the person and job change accounted for within the model as in the individual models (Q1: 95% CI: [0.99, 1.48]; Q2: 95% CI: [1.09, 1.56]; see Table 3).

3.2.2 Get on the Balcony

Three questions from the “Get on the Balcony” score (4) produced mixed effect models:

- Q4: When difficulties emerge in our organization, I am good at stepping back and assessing the dynamics of the people involved.
- Q5: In challenging situations, I like to observe the parties involved and assess what’s really going on.
- Q6: In a difficult situation, I will step out of the dispute to gain perspective on it.

All three questions contributed positively to the overall “Get on the Balcony” score (Q4: 95% CI: [1.73, 2.37]; Q5: 95% CI: [1.67, 2.51]; Q6: 95% CI: [1.74, 2.30]; see Table 2). The direction of the contributions from Q4, Q5, and Q6 were the same in the combined model as in the individual models (Q4: 95% CI: [1.07, 1.52]; Q5: 95% CI: [1.01, 1.55]; Q6: 95% CI: [1.30, 1.73]; see Table 3). The effects of the person and job change were accounted for within the models.

3.2.3 Regulate Distress

Two questions from the “Regulate Distress” score (4) produced mixed effect models.

- Q7: I have the emotional capacity to comfort others as they work through intense issues.
- Q8: People recognize that I have confidence to tackle challenging problems.

For these two questions, contributions from these questions improved over time and these questions contributed positively to the overall “Regulate Distress” score (Q7: 95% CI: [1.18, 1.72]; Q8: 95% CI: [1.49, 1.98]; see Table 2). The direction of the contributions from Q7 and Q8 were the same in the combined model as in the individual models (Q7: 95% CI: [1.08, 1.48]; Q8: 95% CI: [1.42, 1.80]; see Table 3). The effects of the person and job change were accounted for within the models.

3.2.4 Identify the Adaptive Challenge

One question from the “Identify the Adaptive Challenge” score (4) produced a mixed effect model: Q9: When others are struggling with intense conflicts, I step in to resolve their differences for them. For this question, it had to be reverse coded to contribute positively to the overall “Identify the Adaptive Challenge” score (Q9: 95% CI: [-1.39, -0.88]; see Table 2). Since there was only one question, no combined mixed effect regression model was created. The effects of the person and job change were accounted for within the model.

3.2.5 Protect Leadership Voices from Below

One question from the “Protect Leadership Voices from Below” score (4) produced a mixed effect model: Q10: I am open to people who bring up unusual ideas that seem to hinder the progress of the group. For this question, contributions improved over time and this question contributed positively to the overall “Protect Leadership Voices from Below” score (Q10: 95% CI: [1.21, 1.61]; see Table 2). Since there was only one question, no combined mixed effect regression model was created. The effects of the person and job change were accounted for within the model.

Table 2. Mixed Effect Regression Results for Selected Questions (4). [95% CI Reported for Estimates of Fixed Effects]

	Tests of Fixed Effects	Estimates of Fixed Effects	Covariance Parameters
“Maintain Disciplined Attention”			
During organization change, I challenge people to concentrate on the “hot” topics. [Q1]	I: F(1, 8.69) = 583.01 T: F(1, 16.06) = 15.22 Q: F(1, 252.81) = 79.59	I: [11.27, 13.61] T: [0.19, 0.64] Q: [1.04, 1.62]	R: 1.83 (0.21) P: 2.34 (0.45) J: 0.00 (0.08)
I thrive on helping people find new ways of coping with organizational problems. [Q2]	I: F(1, 16.65) = 377.04 T: F(1, 86.68) = 8.83 Q: F(1, 263.83) = 101.29	I: [10.49, 13.06] T: [0.11, 0.55] Q: [1.14, 1.69]	R: 1.74 (0.20) P: 2.13 (0.42) J: 0.09 (0.20)
In an effort to keep things moving forward, I let people avoid issues that are troublesome. [Q3]	I: F(1, 9.29) = 1708.45 T: F(1, 97.34) = 12.72 Q: F(1, 262.03) = 152.63	I: [20.01, 22.32] T: [0.17, 0.58] Q: [-1.86, -1.44]	R: 1.60 (0.18) P: 1.71 (0.35) J: 0.09 (0.20)
“Get on the Balcony”			
When difficulties emerge in our organization, I am good at stepping back and assessing the dynamics of the people involved. [Q4]	I: F(1, 35.50) = 342.60 T: F(1, 20.12) = 1.49 Q: F(1, 239.78) = 160.98	I: [9.01, 11.72] T: [-0.09, 0.35] Q: [1.73, 2.37]	R: 1.79 (0.21) P: 2.33 (0.46) J: 0.01 (0.10)
In challenging situations, I like to observe the parties involved and assess what’s really going on. [Q5]	I: F(1, 78.85) = 123.27 T: F(1, 37.56) = 0.50 Q: F(1, 262.65) = 95.42	I: [8.17, 11.74] T: [-0.16, 0.33] Q: [1.67, 2.51]	R: 2.14 (0.25) P: 2.69 (0.53) J: 0.04 (0.16)
In a difficult situation, I will step out of the dispute to gain perspective on it. [Q6]	I: F(1, 28.11) = 339.12 T: F(1, 12.88) = 2.78 Q: F(1, 228.13) = 200.97	I: [9.42, 11.78] T: [-0.05, 0.36] Q: [1.74, 2.30]	R: 1.42 (0.16) P: 2.75 (0.48) J: 0.00 (0.07)
“Regulate Distress”			
I have the emotional capacity to comfort others as they work through intense issues. [Q7]	I: F(1, 19.87) = 394.11 T: F(1, 126.08) = 7.81 Q: F(1, 259.85) = 109.07	I: [11.87, 14.66] T: [0.08, 0.48] Q: [1.18, 1.72]	R: 1.41 (0.16) P: 1.95 (0.37) J: 0.12 (0.24)
People recognize that I have confidence to tackle challenging problems. [Q8]	I: F(1, 26.61) = 590.40 T: F(1, 17.56) = 5.90 Q: F(1, 256.74) = 200.22	I: [11.50, 13.62] T: [0.03, 0.39] Q: [1.49, 1.98]	R: 1.22 (0.14) P: 1.40 (0.29) J: 0.00 (0.06)

	Tests of Fixed Effects	Estimates of Fixed Effects	Covariance Parameters
“Identify the Adaptive Challenge”			
When others are struggling with intense conflicts, I step in to resolve their differences for them. [Q9]	I: F(1, 8.94) = 1931.13 T: F(1, 28.76) = 0.49 Q: F(1, 250.11) = 77.72	I: [18.12, 20.08] T: [-0.14, 0.28] Q: [-1.39, -0.88]	R: 1.73 (0.20) P: 1.14 (0.28) J: 0.01 (0.09)
“Protect Leadership Voices From Below”			
I am open to people who bring up unusual ideas that seem to hinder the progress of the group. [Q10]	I: F(1, 14.48) = 1077.79 T: F(1, 29.98) = 14.42 Q: F(1, 262.94) = 187.59	I [12.42, 14.15] T: [0.15, 0.50] Q: [1.21, 1.61]	R: 1.14 (0.13) P: 1.24 (0.25) J: 0.01 (0.07)

Note: I: Intercept; T: Time; Q: Question; R: Residual; P: Person; J: Job Change

Table 3. Combined Model Mixed Effect Regression Results for Selected Scores and Questions (4). [95% CI Reported for Estimates of Fixed Effects]

	Tests of Fixed Effects	Estimates of Fixed Effects	Covariance Parameters
“Maintain Disciplined Attention”			
Q1, Q2, Q3	I: F(1, 34.66) = 187.35 T: F(1, 56.03) = 4.37 Q1: F(1, 253.76) = 97.13 Q2: F(1, 263.02) = 119.82 Q3: Removed	I: [7.05, 9.51] T: [0.01, 0.39] Q1: [0.99, 1.48] Q2: [1.09, 1.56] Q3: Removed	R: 1.32 (0.15) P: 1.44 (0.29) J: 0.03 (0.10)
“Get on the Balcony”			
Q4, Q5, Q6	I: F(1, 43.58) = 17.96 T: F(1, 141.11) = 1.37 Q4: F(1, 208.82) = 126.59 Q5: F(1, 246.09) = 86.56 Q6: F(1, 217.07) = 192.64	I: [1.54, 4.35] T: [-0.24, 0.06] Q4: [1.07, 1.52] Q5: [1.01, 1.55] Q6: [1.30, 1.73]	R: 0.77 (0.09) P: 1.18 (0.22) J: 0.11 (0.19)
“Regulate Distress”			
Q7, Q8	I: F(1, 43.83) = 194.65 T: F(1, 106.25) = 4.51 Q7: F(1, 263.38) = 163.93 Q8: F(1, 261.81) = 267.95	I: [6.73, 9.00] T: [0.01, 0.31] Q7: [1.08, 1.48] Q8: [1.42, 1.80]	R: 0.84 (0.10) P: 0.67 (0.15) J: 0.04 (0.10)

Note #1: I: Intercept; T: Time; Q: Question; R: Residual; P: Person; J: Job Change

Note #2: Combined Models for “Identify the Adaptive Challenge” and “Protect Leadership Voices from Below” are Not Applicable.

4. Discussion

The LPW Certificate program offered by the AAFP had noticeable effects on the scholars of the first cohort. Differences in the majority of the 10 questions from the Adaptive Leadership Questionnaire presented here show that change. For the five questions within the “Maintain Disciplined Attention” score, three of the questions showed appreciable gains over time, as well as in the combined model, leading to higher scores in this leadership category. The scholars gained knowledge and/or confidence in helping people face leadership issues and challenges. For the five questions within the “Get on the Balcony” score, the three questions with models that converged did not show any change over time. The scores remained low throughout the cohort, indicating that the LPW Certificate program probably did not address stepping back and looking at the complexities of situations.

For the five questions within the “Regulate Distress” score, two of the questions showed substantial gains over time, as well as in the combined model, leading to higher scores in this adaptive leadership category. The scholars gained knowledge and/or confidence in handling situations around distress over the cohort period. This was expected since the curriculum of the LPW Certificate program was created to specifically address physician burnout and well-being, which are tied to feelings of distress. While the one of five questions included from the “Identify the Adaptive Challenge” score did not change over time (scores were high throughout the cohort period), the one of five questions included from the “Protect Leadership Voices from Below” score did change over time. Scholars were more open to low-status member contributions at the end of the cohort than at the beginning.

Limitations: One limitation of this analysis is that it only covers the first cohort of the LPW Certificate. While the second cohort is currently underway, the results could be different with more information. Also, not every scholar completed each survey and therefore we could not track all scholars over time.

The LPW Certificate Program by the AAFP (funded by the United Health Foundation) has already shown to have an impact on its scholars. The scholars are better positioned to handle their distress and various issues within their organization, which can be seen in the various scores from the Adaptive Leadership Questionnaire (4) asked of the first set of scholars.

Acknowledgements

The authors would like to thank the scholars of Cohort 1 for their participation in the evaluation surveys.

References

1. Dewa CS, Loong D, Bonato S, Trojanowski L. The Relationship Between Physician Burnout and Quality of Healthcare in Terms of Safety and Acceptability: A Systematic Review. *BMJ Open*. 2017;7:e015141. doi: 10.1136/bmjopen-2016-015141.
2. Melnikow J, Padovani A, Miller M. Frontline Physician Burnout During the COVID-19 Pandemic: National Survey Findings. *BMC Health Services Research*. 2022;22:365. doi: 10.1186/s12913-022-07728-6.
3. United Health Foundation and American Academy of Family Physicians Foundation Partner to Promote Physician Well-Being and Reduce Burnout. In: Foundation UH, editor. Minnetonka, MN: UnitedHealth Group; 2020.
4. Northouse PG. *Leadership Theory and Practice*. 7th ed. Thousand Oaks, CA: Sage; 2016.