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A national survey of health professional student preceptors' workplace mental health and well-being

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ABSTRACT

Background: In response to concerns over the health of United States of America's (USA) healthcare workers, the USA Office of the Surgeon General emphasized the importance of addressing burnout and poor workplace conditions. This paper presents the findings of the National Area Health Education Centers Organization preceptors' survey 2024, which assessed the workplace mental health and well-being of USA healthcare preceptors.

Method: The survey, conducted between November 2023 and February 2024, included 123 preceptors in the Area Health Education Centers program from 49 states.

Results: The results revealed insights into the preceptor's mental health challenges. Notably, 58.2% reported that precepting contributes to burnout, while 41.8% self-reported burnout, and 45.3% felt loneliness. Despite these challenges, 92.5% of respondents reported a high quality of life.

Conclusion: These findings highlight the need for targeted interventions to enhance preceptors' well-being. This survey identified the importance of supporting the mental health and well-being of healthcare preceptors.

Keywords: preceptorship, burnout professional, loneliness, mental health, psychological well-being, personal satisfaction

INTRODUCTION

Due to rising concerns over the health of United States of America's (USA) workers, the USA Office of the Surgeon General (OSG) released an advisory report in May 2022 addressing increased burnout, turnover, lack of resiliency, and poor workplace conditions among healthcare workers [1]. In October 2022, the OSG released *The USA surgeon general's framework for workplace mental health & well-Being* [2]. The framework is built on five essentials centered around worker voice and equity. These five essentials, each aligned with two basic human needs, are *protection from harm, connection and community, work-life harmony, mattering at work*, and *opportunity for growth*. Together, these reports represent a call to action for health care organizations, payers, educators, and health professionals to address workplace mental health and well-being. In May 2023, the OSG released a new advisory on the epidemic of loneliness and isolation, where the lack of social connection is linked to poor health and other negative outcomes [3].

Workplace mental health and well-being are important issues among health professional student preceptors as well. Previous research has demonstrated that preceptors struggle with many of the issues identified by the OSG, including burnout, poor workplace mental health, and lack of work-life harmony [4, 5]. Heath education models in the U.S. and beyond rely heavily on health professionals serving as preceptors to train the next generation of the healthcare workforce. One healthcare organization that uses preceptors extensively to help accomplish its mission is the National Area Health Education Centers Organization (NAO). NAO represents a network of over 300 Area Health Education Centers (AHEC) program offices and centers across all 50 states. AHEC's mission is to enhance access to primary and preventive health care by improving the supply and distribution of health professionals [6]. The AHEC program was developed by the USA Congress in 1971 to recruit, train, and retain a health professions workforce committed to underserved populations. AHEC's preceptors are typically volunteers who perform their precepting activities on top of their roles and responsibilities.

Preceptors play a crucial role in bridging the gap between theoretical knowledge and practical application for students, ensuring that future health professionals are well-prepared [7]. Their responsibilities include guiding students through clinical practice, providing feedback, and serving as role models. Preceptors often cite benefits to serving in this mentoring role, such as personal and professional fulfillment, enhanced leadership skills, and opportunities for continuous learning. But acting as a preceptor is typically in addition to their other roles and responsibilities, such as providing patient care, adding work burden.

In spring 2023, we partnered with the Georgia AHEC to pilot test a new survey instrument developed by our team and based on the OSG's new framework. The purpose of the instrument is to measure workplace mental health and well-being using a more holistic and up-to-date foundation. The results of the instrument, hereafter referred to as the *Augusta scale*, have been published previously [8]. In short, we found evidence supporting the validity and reliability of the *Augusta scale*, and valuable insights were gained on the mental health and well-being of these preceptors. Based on this successful pilot test, our research team approached the NAO about a national survey. In addition, for this national survey, the *Augusta scale* was expanded to include new questions about loneliness, based on the OSG's new advisory, and on personal and professional fulfillment. This project, in partnership with NAO, aimed to gain insight into workplace mental health, well-being, fulfillment, and loneliness among AHEC preceptors nationally.

MATERIALS AND METHODS

Survey Design

Salant and Dillman's recommendations from "how to conduct your own survey" were used for our survey design, administration, and study methodology [9]. These included how to properly construct the wording of questions, prepare an effective introduction that will engage potential respondents, and avoid commonly made mistakes in survey design [9].

The survey instrument comprised several distinct parts: 13 questions regarding demographic information, one question about self-reported quality of life (QoL), one question about self-reported burnout, three questions about self-reported loneliness, seven questions about personal and professional fulfillment, 22 questions about workplace mental health and well-being, and one open-ended question. The complete survey can be seen in **Appendix A**.

A majority of the survey instrument (demographic questions, QoL, burnout, and workplace mental health and well-being) was pilot tested previously in a study with preceptors as part of the Georgia AHEC and the survey validity and reliability have been reported elsewhere [8].

The 22 survey questions about workplace mental health and well-being comprise the *Augusta scale* and are divided into domains based on the five essentials in the OSG's framework, as previously discussed. In short, responses to each question were measured on a five-point Likert scale, where "*strongly disagree*" was assigned a score of 1 while "*strongly agree*" was assigned a score of 5. The total scores for each of the five domains ranged between 3 (minimum score for domain 5) and 30 (maximum score for domain 1). The total possible score for the 22 questions ranged between 22 to 110, with higher scores indicating higher overall well-being. Seven questions related to personal and professional fulfillment (i.e., a sense of positive emotion and satisfaction, meaning, and accomplishment) were added to the survey, based on the seven components of a holistic work-life harmony plan proposed by one of us in 2023 [10]. The components are career, community and citizenship, discretionary time and hobbies, faith (i.e., religious beliefs or personal spirituality), finances, health, and relationships. Three questions about self-reported loneliness were added to the survey based on the OSG's advisory "our epidemic of loneliness and isolation", released in May 2023 [3]. The research team and the NAO senior staff personally tested the draft survey.

Survey Administration

The NAO coordinated with the state AHEC chapters to administer the survey to health professionals who serve as volunteer preceptors to health professional students. The target group consisted of healthcare professionals who serve as preceptors for AHEC. The survey instrument itself was built using Qualtrics. Survey data was collected between November 20, 2023, and February 29, 2024, with reminders using the NAO newsletter and emails to state AHEC chapters every two to three weeks. Participation was completely voluntary, and responses were anonymous. This survey excluded preceptors in Georgia as it was the site of the 2023 pilot survey.

Survey Analysis

Based on our previous study [8], the sample size calculation indicated that 776 responses were required to detect a meaningful difference in the total well-being score across age, gender, and ethnic groups at an alpha level of 0.05 and a power of 0.80. However, we were unable to calculate a sample size for this study as the total number of preceptors linked with the NAO could not be determined due to varying database management practices across the state AHEC chapters.

Descriptive statistics and bivariate analyses were performed to check the variation in total score across demographic variables. Responses to a few questions were modified for analytical purposes. For example,

(1) a composite binary variable was created by counting the number of respondents reporting "often/some of the time" for at least two of the three loneliness questions,

(2) responses to fulfillment questions were dichotomized into "no" (*strongly disagree, somewhat disagree, neither agree nor disagree*) and "yes" (*somewhat agree, strongly agree*),

(3) responses to the QoL question were combined into high (*as good as it can be, somewhat good, neutral*) and low (*somewhat bad, as bad as it can be*) [11], and

(4) following the study in [12], responses to burnout questions were dichotomized.

The *Augusta scale* cumulative score and domain sub-scores were calculated by excluding observations having missing values on all 22 items. We compared average total well-being scores and specific domain scores across sociodemographic variables. Further, we compared average total well-being scores between those who reported burnout and those who did not. The internal consistency of the *Augusta scale* was also assessed for this population by calculating Cronbach's alpha and McDonald's omega values.

RESULTS

There were 123 respondents to the survey. **Table 1** contains the demographics of the respondents. Nearly 62% of the respondents were 35-54 years of age, 66% were female, 86% were white, and 46% practiced in rural areas. Physicians (35.0%) and pharmacists (31.7%) comprised the two most common types of health professionals. Most respondents were from the South and West regions of the USA.

Table 1. Survey respondent demographics (N = 123*)

Variables		Value
Age group	18-34	19 (15.4%)
	35-54	76 (61.8%)
	55+	28 (22.8%)
Sex	Female	81 (65.9%)
	Male	42 (34.1%)
Ethnicity	White	106 (86.2%)
	Non-White	17 (13.8%)
Practice type	Physician	43 (35.0%)
	APN	6 (4.9%)
	PA	10 (8.1%)
	Pharmacist	39 (31.7%)
	Other	25 (20.3%)
Practice location	Frontier	1 (0.8%)
	Rural	57 (46.4%)
	Suburban	23 (18.7%)
	Urban	42 (34.1%)
Region**	Northeast	7 (5.7%)
	Midwest	9 (7.4%)
	South	42 (34.4%)
	West	64 (52.5%)
	Missing	1

Note. *Column percentages are shown for categorical variables by excluding the missing values (mean [SD] values are shown for continuous variables) & **Regional categorization of the states is as per USA Census Bureau's recommendations

Table 2. Respondents and precepting (N = 123*)

Variables	Value
Currently precepting	
No, but I did in the past	18 (15.9%)
Yes	95 (84.1%)
Missing	10
Years of precepting	13.7 (11.3)
Missing	10
Average weeks per year spent on precepting	24.6 (15.3)
Missing	12
Thinks preceptorship causes burnout	
No	31 (28.2%)
Not sure	15 (13.6%)
Yes	64 (58.2%)
Missing	13
Students' areas	
Medicine	15 (13.4%)
Nursing	5 (4.5%)
Pharmacy	34 (30.4%)
PA	6 (5.4%)
Other	19 (17.0%)
More than one type	33 (29.5%)
Missing	11

Note. *Column percentages are shown for categorical variables by excluding the missing values (mean [SD] values are shown for continuous variables)

Table 2 contains the results of several questions that asked respondents about their experiences and perceptions of serving as a preceptor. The survey respondents reported that, on average, they have been serving as preceptors for health professional students for 13.7 years (standard deviation [SD] = 11.3), and they precept, on average, for 24.6 weeks per year (SD = 15.3). A majority (58.2%) believed that serving as a preceptor causes burnout, while 28.2% believed it does not, and 13.6% were not sure. Among respondents to our survey, the most common type of students who were precepted were pharmacy students (30.4%), while 29.5% of preceptors had precepted more than one type of health professional student.

The responses to the questions related to QoL, burnout, loneliness, workplace mental health and well-being, and fulfillment are displayed in **Table 3**.

Table 3. Preceptors and QoL, burnout, mental health and well-being, fulfillment, and loneliness (N = 123*)

Variables	Value
QoL	
High-QoL	102 (92.7%)
Low-QoL	8 (7.3%)
Missing	13
Feels burnout	13.7 (11.3)
No-burnout	64 (58.2%)
Burnout	46 (41.8%)
Missing	13
Feeling of loneliness	
No	58 (54.7%)
Yes	48 (45.3%)
Missing	17
Mean score on Augusta scale	87.4 (15.5)
Missing	16
Mean score for domain-1: Protection from harm (6 items)**	24.7 (4.4)
Missing	16
Mean score for domain-2: Connection and community (4 items)**	17.7 (3.3)
Missing	16
Mean score for domain-3: Work-life harmony (5 items)[2]	18.6 (4.4)
Missing	16
Mean score for domain-4: Mattering at work (4 items)[2]	15.9 (3.4)
Missing	16
Mean score for domain-5: Opportunity for growth (3 items)[2]	10.6 (3.3)
Missing	18
Mean score on importance of precepting questions (6 items)[2]	25.0 (3.8)
Missing	12
Career: Important for personal and professional fulfillment	
No	5 (4.8%)
Yes	100 (95.2%)
Missing	18
Community & citizenship: Important for personal and professional fulfillment	
No	17 (16.0%)
Yes	89 (84.0%)
Missing	17
Discretionary time and hobbies: Important for personal and professional fulfillment	
No	7 (6.6%)
Yes	99 (93.4%)
Missing	17
Faith: Important for personal and professional fulfillment	
No	39 (41.9%)
Yes	54 (58.1%)
Missing	30
Finances: Important for personal and professional fulfillment	
No	8 (7.5%)
Yes	98 (92.5%)
Missing	17
Health: Important for personal and professional fulfillment	
No	7 (6.6%)
Yes	99 (93.4%)

Table 3 (Continued). Preceptors and QoL, burnout, mental health and well-being, fulfillment, and loneliness (N = 123*)

Variables	Value
Missing	17
Relationships: Important for personal and professional fulfillment	
No	7 (6.6%)
Yes	99 (93.4%)
Missing	17

Note. *Column percentages are shown for categorical variables by excluding the missing values (mean [SD] values are shown for continuous variables) & **Range of possible scores for each domain: Protection from harm: 6-30, connection and community: 4-20, work-life harmony: 5-25, mattering at work: 4-20, & opportunity for growth: 3-15

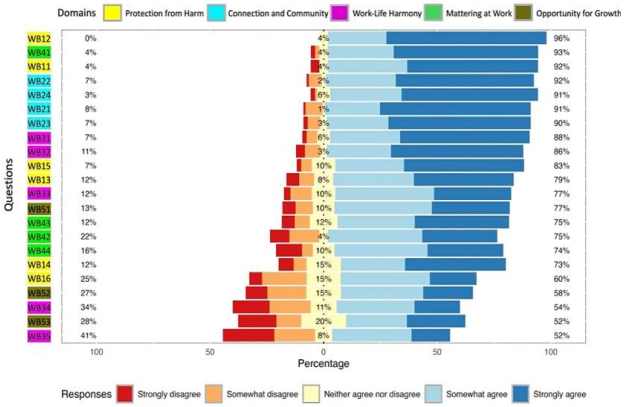

Figure 1. Distribution of *Augusta scale* responses (N = 123) (Source: Authors' own elaboration)

The large majority of respondents (92.5%) self-reported a high QoL, while more than four in every ten self-reported burnout (41.8%) and loneliness (45.3%). We also checked bivariate associations among QoL, burnout, and loneliness. All these associations were statistically significant. Regarding the 22 questions on workplace mental health and well-being that comprise the *Augusta scale,* the mean cumulative score was 87.4 (SD = 15.5). This suggests the respondents' overall workplace mental health and well-being was good, although, as can be seen in **Table 3**, there were differences noted between the five domains. Overall, connection and community had the most positive scores, while opportunity for growth had the least positive scores. No statistically significant relationships were observed between the *Augusta scale* cumulative total score and demographic factors (age, sex, ethnicity, practice type, location, and region). Finally, in **Table 3**, the scores of the questions related to personal and professional fulfillment are shown. Overall, over 90% of the respondents indicated that six of the seven components of a holistic career and life plan are important, while 58.1% indicated that a seventh component–faith–is important.

Results for Specifics Augusta Scale Questions

Figure 1 shows the scores for each of the 22 questions in *the Augusta scale*. The percentage on the far right of **Figure 1** indicates the percentage of respondents who answered, "somewhat agree" or "strongly agree". The responses with the highest ratings were for the questions "I am aware of policies and programs related to diversity, equity, inclusion, and accessibility" (WB12) and "I earn a living wage" (WB41).

The most negative responses were recorded for the questions "I can make my work schedule as flexible and predictable as possible" (WB35) and "I can develop my own work schedule" (WB34).

Relationship Between the Augusta Scale Scores and Burnout

Table 4 displays the relationship of the *Augusta scale* cumulative scores for respondents who did, and did not, self-report burnout to various demographic variables. The cumulative scale score was consistently lower (worse) among those who reported burnout across all sociodemographic variables.

In **Table 5**, *the Augusta scale* domain sub-scores are presented across demographic variables. The domain scores followed the same trend as the overall cumulative score, with higher scores across the demographic characteristics.

Relationship Between Health Professions and Burnout and Loneliness

We further explored how burnout and loneliness vary across different health professions. **Figure 2** shows the relationship of burnout and loneliness across each type of health professional preceptors. In **Figure 2**, the orange lines

Table 4. Association between *Augusta scale* cumulative score and self-reported burnout

	Variables	No-burnout (N = 64*)	Burnout (N = 46*)	p-value**
Age group	18-34	87.7 (9.7)	77.1 (17.1)	< 0.001
	35-54	96.4 (8.9)	78.5 (16.1)	
	55+	93.5 (11.8)	72.5 (18.8)	
Sex	Female	96.3 (8.0)	79.8 (13.6)	< 0.001
	Male	92.3 (12.4)	71.9 (21.6)	
Ethnicity	White	94.5 (11.0)	78.8 (16.1)	< 0.001
	Non-White	95.0 (4.9)	67.3 (15.1)	
Practice type	Physician	92.5 (12.0)	74.7 (17.8)	< 0.001
	APN	110.0 (NA)	77.2 (16.0)	
	PA	89.4 (6.7)	60.0 (15.6)	
	Pharmacist	95.3 (9.6)	79.6 (15.7)	
	Other	98.8 (7.0)	88.6 (6.2)	
Practice location	Frontier	96.0 (NA)	NA (NA)	< 0.001
	Rural	96.1 (9.1)	75.2 (17.6)	
	Suburban	95.9 (7.8)	81.8 (14.5)	
	Urban	92.0 (12.5)	79.8 (14.7)	

Note. *Total score on *Augusta scale*: Mean (SD) & **Two-way ANOVA

Table 5. Domain-specific *Augusta scale* domain sub-scores and demographics (N = 123)

Characteristic		Survey domains*				
		Protection from harm (6 items)	Connection and community (4 items)	Work-life harmony (5 items)	Mattering at work (4 items)	Opportunity for growth (3 items)
Overall		24.7 (4.4)	17.7 (3.3)	18.6 (4.4)	15.9 (3.4)	10.6 (3.3)
Age group (years)	18-34	24.6 (6.0)	17.7 (2.2)	16.8 (4.6)	13.3 (4.4)	9.2 (3.3)
	35-54	24.5 (4.1)	17.6 (3.5)	18.9 (4.2)	16.2 (3.2)	10.7 (3.4)
	55+	25.2 (4.1)	18.1 (3.3)	18.8 (4.8)	16.8 (2.8)	11.1 (3.2)
Sex	Female	24.9 (4.1)	18.1 (2.8)	18.7 (3.9)	16.0 (3.2)	10.6 (3.3)
	Male	24.3 (4.8)	17.1 (4.0)	18.5 (5.3)	15.7 (3.8)	10.5 (3.5)
Ethnicity	White	24.7 (4.4)	17.7 (3.4)	18.6 (4.4)	15.9 (3.3)	10.7 (3.3)
	Non-White	24.5 (4.2)	17.9 (3.1)	18.6 (4.3)	16.1 (3.9)	9.9 (3.4)
Profession	Physician	24.3 (4.7)	17.1 (3.8)	18.1 (4.6)	15.8 (3.2)	10.3 (3.7)
	APN	24.2 (4.2)	17.0 (4.6)	17.3 (4.5)	14.7 (4.5)	9.5 (5.2)
	PA	25.1 (4.5)	17.9 (3.6)	17.2 (4.4)	13.4 (3.6)	9.2 (2.8)
	Pharmacist	24.5 (4.8)	17.9 (3.0)	18.3 (4.5)	16.1 (3.6)	10.7 (3.0)
	Other	25.7 (2.7)	19.1 (1.3)	21.6 (2.2)	17.6 (2.0)	12.0 (2.5)
Practice location	Frontier	25.0 (NA)	19.0 (NA)	22.0 (NA)	20.0 (NA)	10.0 (NA)
	Rural	24.3 (4.8)	17.3 (3.9)	18.6 (4.6)	15.7 (3.7)	10.5 (3.6)
	Suburban	24.5 (4.5)	18.4 (3.2)	19.2 (4.0)	16.4 (2.9)	11.4 (2.2)
	Urban	25.3 (3.8)	18.0 (2.4)	18.2 (4.5)	15.8 (3.2)	10.1 (3.6)

Note. *Mean (SD) of total scores for each survey domains are shown (observations with zero responses are excluded), protection from harm: score range (6 to 30), connection and community: score range (4 to 20), work-life harmony: score range (5 to 25), mattering at work: score range (4 to 20), & opportunity for growth: score range (3 to 15)

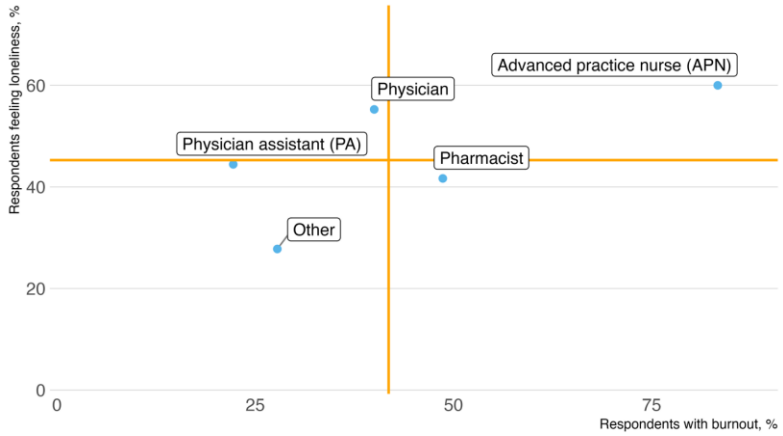

Figure 2. Loneliness and burnout across different health professions (Source: Authors' own elaboration)

represent overall mean percentages of loneliness and burnout, respectively, on the y- and x-axis for the entire sample.

Advanced practice nurses (APNs) had the highest rate of self-reported loneliness and burnout, placing them in the upper right quadrant. Pharmacists reported loneliness slightly less frequently than the overall mean but reported higher levels of burnout than the overall mean. Physicians reported loneliness more frequently but burnout slightly less frequently than the overall mean. In contrast, physician assistants (PAs) reported about the mean level of loneliness but reported the least amount of burnout among these four types of health professionals and were the only health professional type to be in the lower left quadrant.

Relationship Between Health Professions and Fulfillment

The differences across health professions in the seven components of personal and professional fulfillment are shown in **Figure 3**. **Figure 3** shows the percentage of respondents in each health professional type who strongly agree or somewhat agree that each of the seven components contributes to their own personal and professional fulfillment. As was reported earlier, the vast majority of respondents indicated that six of the seven components are important to their fulfillment. The component with the least agreement, and widest variation between health professions was faith, ranging from 43.8% of pharmacists to 85.7% of PAs who strongly or somewhat agreed it was important to their fulfillment. The components that were the most important to each health professional type were as follows: hobbies for physicians; all components except faith for APNs; hobbies, finances, health, and relationships for PAs; health for pharmacists; and career, community, and relationships for others.

The internal consistency assessment of the *Augusta scale* yielded a Cronbach's alpha value of 0.92 and a McDonald's omega value of 0.87, indicating excellent internal consistency of the overall scale (threshold > 0.70). The domain-level alpha values ranged from 0.69 to 0.91, whereas the omega values for the high-order model ranged from 0.77 to 0.95 for all but one domain, indicating moderate to excellent domain-specific internal consistency of the scale. The inconsistent > 1 omega value for the work-life harmony domain was observed mainly due to the small sample size.

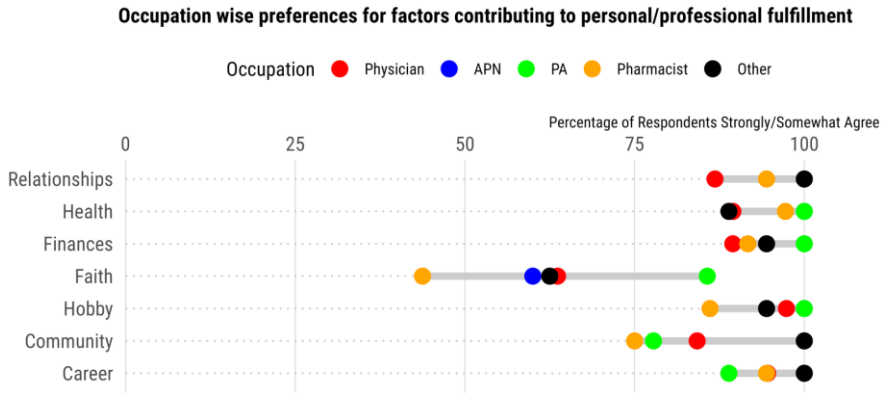

Figure 3. Fulfillment across different health professions (Source: Authors' own elaboration)

DISCUSSION

This national survey of AHEC preceptors has provided valuable insights into a number of areas that will be discussed in this section. First, some positives and negatives about these preceptors' well-being was observed. As measured by the *Augusta scale*, over nine out of ten respondents reported a high QoL and indicated that their workplace mental health and well-being were good. Moreover, the mean score on the *Augusta scale* (87.4 with a SD of 15.5) was remarkably similar to the mean score in our pilot survey of Georgia AHEC preceptors (85.9 with a SD of 17.4) [8]. Yet, more than four in every ten reported burnout and loneliness, and almost six in every ten believe that serving as a preceptor causes burnout. Not surprisingly, those who reported burnout also reported lower workplace mental health and well-being. The two lowest (worst) scoring questions in *the Augusta scale* were related to work scheduling, which is part of the work-life harmony domain.

These results compare favorably to previous studies that have explored the perceptions of health professional preceptors on these topics. Similar to our findings, high burnout rates among healthcare workers have been reported and highlight the importance of organizational interventions to improve well-being and reduce burnout [6]. Key areas for supporting healthcare worker well-being during crises align with our survey's emphasis on the need for visible leadership and safe working environments [13]. Additionally, pandemic burnout in academia has been well-documented, paralleling our findings on the mental health challenges faced by preceptors during the COVID-19 pandemic [14]. These comparisons underscore the critical need for targeted interventions to support preceptors' well-being and professional fulfillment.

Second, important differences in burnout, loneliness, and sources of fulfillment were noted across health professions. PAs had the lowest rate of self-reported burnout, pharmacists had the lowest rate of loneliness, while APNs reported the highest rate of both burnout and loneliness. PAs more frequently rated faith as being important to personal and professional fulfillment. During the pandemic, nurses, including APNs, experienced higher rates of burnout, greater intent to leave their current hospital, and worse rated personal health than physicians [15]. An integrative review from 2022 found associations between nurse burnout, loneliness, and lack of social support [16]. A national survey of PAs found that more than 80% reported satisfaction with their careers generally and with their choice of specialty [17]. This may be due, at least in part, to some of the features of the PA position, including the ability to change specialties mid-career and the focus on team-based care [18]. The option to change specialties may also result in lower burnout among PAs.

Third, our results suggest an intricate relationship between various mental constructs. Especially the results on burnout and loneliness versus QoL need further explanation. The contrasting results observed are primarily due to related but distinct constructs of burnout and QoL. While burnout manifests as a psychological syndrome primarily in a professional context, QoL encompasses broader aspects, including physical health, psychological state, social relationships, and environmental factors. Therefore, individuals may experience burnout while being satisfied with their overall QoL. Precepting may provide them with a sense of meaning and purpose even in the presence of occupational stress [19]. Understanding how the respondents perceived the temporality of the constructs is also important. The burnout question might have been perceived as inquiring about their current feelings related to work. In contrast, the QoL assessment might have been perceived as inquiring about broader and more stable life domains.

Fourth, we identified certain elements that contribute to personal and professional fulfillment, such as faith. Literature suggests that faith serves as a protective factor against burnout [20], enhances mental well-being and QoL [21, 22], and adds meaning and purpose to clinical practice [23]. Therefore, some medical schools are now incorporating spiritual care into their curricula [24]. On similar grounds, how faith-based interventions could be tested to improve professional and personal fulfillment. Our data revealed varying contributions of faith across the professions. Since we did not inquire about the reasons behind such responses, it is challenging to explain the possible reasons behind the varied reactions. We recommend conducting a qualitative study in the future, not only to investigate variations in responses to faith but also to examine other included elements. Understanding the contributions of these elements could pave the way to designing more comprehensive solutions for workplace mental health and well-being, not only for preceptors but also for all healthcare professionals.

Fifth, this survey has significant implications for AHEC and health professional preceptors. While serving as a volunteer preceptor undoubtedly brings some benefits such as fulfilling a sense of duty, it was disconcerting that such a large percentage of preceptors believe that precepting causes burnout and that

work-life harmony was the lowest (worst) scoring domain in the *Augusta scale*. Training programs to address burnout and promote work-life harmony should be developed and offered by the NAO and/or state AHEC to preceptors, especially those at high risk of these issues, such as APNs. Similarly, programs addressing loneliness should be implemented, targeting APNs given that, within our sample, they had the highest rates of burnout and loneliness. The OSG recommends five strategies to combat burnout in health professionals:

(1) learn to recognize the signs of distress, mental health challenges, and burnout,

(2) stay connected and reach out for help,

(3) prioritize moments of joy and connection,

(4) get back to the basics with good health habits such as exercise, eating healthily, and getting enough sleep, and

(5) advocate for positive changes.

Additionally, as has been argued elsewhere, health professionals should proactively address clinician burnout by engaging in a holistic approach of personal and professional planning, ideally with a mentor, coach, or trusted colleague [25, 26]. The NAO and state AHEC could offer workshops on career and life planning and fulfillment on a regular basis to preceptors, with a particular focus on work-life harmony. Finally, it is recommended that this survey be administered on a two-to-three-year cycle to compare future surveys to the baseline data collected in this survey.

There are a number of limitations that need to be acknowledged. First, we could not calculate the response rate due to the inability to determine a denominator (i.e., the total number of AHEC preceptors at the national level). The number of responses we received was lower than we needed according to our Power calculation, so we could only perform descriptive analyses in place of many of the planned statistical analyses. Second, certain regions and professions were overrepresented in the sample, despite the survey being a national one of health professional preceptors. The majority of the respondents were white females, predominantly from the South and West regions. Two-thirds of the respondents were physicians and pharmacists, which limits the generalizability of the results to other health professionals.

However, ample evidence demonstrates disparities in workplace-related outcomes across different groups. Literature suggests that underrepresented minority physicians (mainly black and Latinx) often experience a higher level of burnout [27, 28]. The literature on gender disparities in burnout among healthcare providers shows that higher burnout rates are reported among female than male physicians [29, 30]. We refer readers to this literature to draw more policy-oriented solutions due to concerns about the generalizability of our results. Third, the cross-sectional nature of the data prevents establishing any causal relationship between the burnout and the *Augusta scale* score. Fourth, relying on self-reported data may introduce recall and social desirability bias, therefore potentially inflating the reporting of burnout and other mental health issues. Fifth, the survey was carried out during the winter, a well-known period for high stress among healthcare workers due to the high burden of illness and staff shortages, which may have caused an upward bias in burnout and other issues reported in our data. Sixth, in the absence of a non-preceptor comparison group, our estimates can be anchored to the respondent's preceptorship role. We recommend more robust and longitudinal data collection in the future to overcome these limitations.

CONCLUSIONS

This national survey of health professional preceptors should serve as a call to action to support these individuals who are so critical of the mission of the NAO and state AHECs. The highest levels of burnout and loneliness were observed among APNs, and the domain with the lowest (worst) well-being scores was work-life harmony, specifically relating to work schedule. Organizations seeking to provide better support to and improve the well-being of preceptors should target these critical areas. This valuable study contributes to the discourse about health professionals' burnout.

Author contributions: PNA: performed data analysis, tables and figures preparation, and drafted initial and revised manuscripts; **ZH:** oversaw data collection and the administrative requirements of the project and contributed to writing manuscript drafts; **MY:** contributed to drafting and revising several versions of the manuscript; & **NJM:** provided overall supervision, contributed to data interpretation, and revisions of the manuscript. All authors have agreed with the results and conclusions.

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Declaration of interest: No conflict of interest is declared by the authors.

Data sharing statement: Data supporting the findings and conclusions are available upon request from the corresponding author.

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APPENDIX A

Wellbeing survey

Please tell us about yourself.

Q1. How old are you?

- 18-24 years old (2)
- 25-34 years old (3)
- 35-44 years old (4)
- 45-54 years old (5)
- 55-64 years old (6)
- 65+ years old (7)

Q2. What is your gender?

- Male (1)
- Female (2)
- Other (3)

(Source: Field study)

Q3. Which race or ethnicity best describes you?

- Alaska Native, Native American or Pacific Islander (1)
- Asian (2)
- Black or African American (3)
- Hispanic or Latino (4)
- White (5)
- Biracial or multiracial (6)
- Prefer not to say (7)

Q4. What kind of healthcare practitioner are you?

- Advanced practice nurse (example: nurse practitioner) (1)
- Physician (example: surgeon) (2)
- Physician assistant (example: anesthesiologist assistant) (3)
- Other (please specify) (4) _____

Q5. In which state is your practice located?

▼ Alabama (1) ... I do not reside in the United States (53)

(Source: Field study)

Q6. How will you characterize the location of your practice? If your practice is spread across multiple counties/areas, then please answer based on the location of your primary practice.

- ○ Rural (4)
- ○ Urban (5)
- ○ Suburban (6)
- ○ Frontier (7)

A preceptor is a community-based clinician who provides teaching for our health professional students.

Q7. Do you currently precept students?

- ○ Yes (1)
- ○ No, but I did in the past (2)

Q8. How many years have you taught (or did you teach) students as a preceptor?

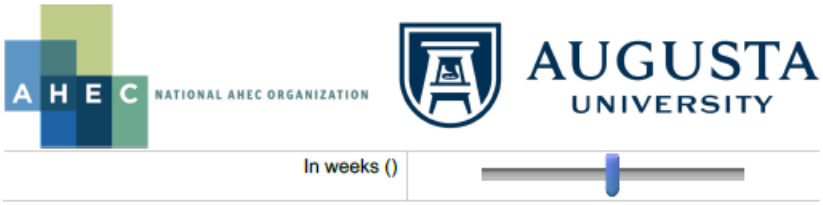
0 5 10 15 20 25 30 35 40

In years ()

Q9. On average, how many weeks per year do you precept students?

0 4 9 13 17 22 26 30 35 39 43 48 52

(Source: Field study)



Q10. What are the disciplines of the students that you have precepted?

- ☐ Medicine (1)
- ☐ Nursing (e.g. advanced practice nursing, including midwifery, CRNA, DNP) (2)
- ☐ Physician assistant (e.g. anesthesiologist assistant) (3)
- ☐ Other (please specify) (4) _____
- ☐ All of the above (5)

(Source: Field study)

Q11. Think about why you precept or have precepted students. How important are each of the following in your decision to precept?

	Very important (1)	Important (2)	Neutral (3)	Unimportant (4)	Very unimportant (5)
Giving back to my profession (1)	○	○	○	○	○
Joy of teaching students, investing in their future (2)	○	○	○	○	○
Demonstrating what community practice is like (3)	○	○	○	○	○
Serving as a role model (4)	○	○	○	○	○
Recruiting for my region or specialty (5)	○	○	○	○	○
Keeping my knowledge current (6)	○	○	○	○	○

(Source: Field study)

WB The U.S. Surgeon General's Framework for Workplace Mental Health and Well-Being mentions, "Work is one of the most vital parts of life, powerfully shaping our health, wealth, and well-being." It provides a sense of purpose, opportunities for growth, and a community.

As per the International Labour Organization (ILO), "Workplace Wellbeing relates to all aspects of working life, from the quality and safety of the physical environment, to how workers feel about their work, their working environment, the climate at work and work organization."

Q12. Which of the following best describes your overall quality of life?

- ○ As good as it can be (1)
- ○ Somewhat good (2)
- ○ Neutral (3)
- ○ Somewhat bad (4)
- ○ As bad as it can be (5)

Q13. Using your own definition of burnout, select the answer below that best fits your situation.

- ○ I enjoy my work. I have no symptoms of burnout. (1)
- ○ I am under stress, and don't always have as much energy as I did, but I don't feel burned out. (2)
- ○ I am definitely burning out and have one or more symptoms of burnout, e.g., emotional exhaustion. (3)
- ○ The symptoms of burnout that I am experiencing won't go away. I think about work frustrations a lot. (4)
- ○ I feel completely burned out. I am at the point where I may need to seek help. (5)

(Source: Field study)

Q14. Do you believe that precepting can cause or contribute to burnout?

- Yes (1)
- No (2)
- Not sure (3)

(Source: Field study)

Q15a. When it comes to your healthcare workplace, how much do you agree with the following statements?

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)	Not applicable (6)
I feel safe from any physical harm. (1)	○	○	○	○	○	○
I am aware of policies and programs related to diversity, equity, inclusion, and accessibility. (2)	○	○	○	○	○	○
I feel safe from psychological harm. (3)	○	○	○	○	○	○
I can talk freely about mental health issues. (4)	○	○	○	○	○	○
I can get support for mental health issues. (5)	○	○	○	○	○	○
I am able to get adequate rest. (23)	○	○	○	○	○	○

(Source: Field study)

Q15b. When it comes to your healthcare workplace, how much do you agree with the following statements?*

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)	Not applicable (6)
I am able to collaborate with others and work in a team. (6)	○	○	○	○	○	○
I am able to create trusted relationships with colleagues. (7)	○	○	○	○	○	○
I feel that I belong to a team. (8)	○	○	○	○	○	○
I feel included on my team. (9)	○	○	○	○	○	○

(Source: Field study)

Q15c. When it comes to your healthcare workplace, how much do you agree with the following statements?*

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)	Not applicable (6)
I have autonomy in my work environment. (10)	○	○	○	○	○	○
I am able to take paid leave. (11)	○	○	○	○	○	○
My colleagues respect my boundaries between work and non-work time. (12)	○	○	○	○	○	○
I can develop my own work schedule. (13)	○	○	○	○	○	○
I can make my work schedule as flexible and predictable as possible. (23)	○	○	○	○	○	○

(Source: Field study)

Q15d. When it comes to your healthcare workplace, how much do you agree with the following statements?*

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)	Not applicable (6)
I earn a living wage (i.e., a wage that is high enough to maintain a normal standard of living). (22)	○	○	○	○	○	○
I am involved in workplace-related decisions. (14)	○	○	○	○	○	○
I feel connected to the organization's mission. (15)	○	○	○	○	○	○
My contribution is acknowledged and rewarded from time to time. (23)	○	○	○	○	○	○

(Source: Field study)

Q15e. When it comes to your healthcare workplace, how much do you agree with the following statements?*

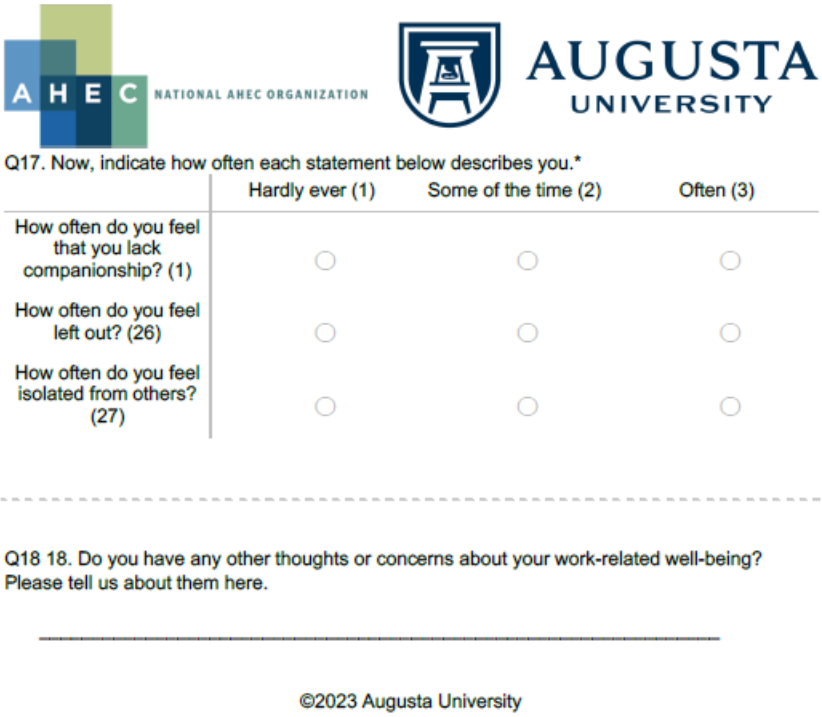
	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)	Not applicable (6)
I receive sufficient opportunities for training, education, and mentoring. (1)	○	○	○	○	○	○
I regularly receive appropriate feedback on my work. (26)	○	○	○	○	○	○
I have clear and equitable pathways for career advancement. (27)	○	○	○	○	○	○

(Source: Field study)

Q16. The following items are important for my overall personal and professional fulfillment.*

	Strongly agree (1)	Somewhat agree (2)	Neither agree nor disagree (3)	Somewhat disagree (4)	Strongly disagree (5)	Not applicable (6)
Career (1)	○	○	○	○	○	○
Community and citizenship (26)	○	○	○	○	○	○
Discretionary time and hobbies (27)	○	○	○	○	○	○
Faith (31)	○	○	○	○	○	○
Finances (32)	○	○	○	○	○	○
Health (33)	○	○	○	○	○	○
Relationships (34)	○	○	○	○	○	○

(Source: Field study)



Q17. Now, indicate how often each statement below describes you.*

	Hardly ever (1)	Some of the time (2)	Often (3)
How often do you feel that you lack companionship? (1)	○	○	○
How often do you feel left out? (26)	○	○	○
How often do you feel isolated from others? (27)	○	○	○

Q18 18. Do you have any other thoughts or concerns about your work-related well-being? Please tell us about them here.

(Source: Field study)