ORIGINAL RESEARCH Associations Between Supervisory Alliance, Medical Resident Distress, Burnout, and Self-Esteem

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Introduction: Supervision is considered a collaboration between a supervisor and supervisee and includes perceptiveness, responsiveness of the supervisor, a state of rapport, and specific learning tasks that allow the individual to work towards a goal. The alliance in supervision has been identified as a key ingredient of effective supervision, regardless of the type of treatment, population, or supervision model being used. While it is known that the medical training environment hosts high rates of burnout, little research has examined the role of supervisory alliance in regard to burnout, distress, and self-esteem. This study aimed to apply previous models of supervisory alliance to medical education, and explore associations between educational alliance and trainee self-esteem, burnout, and distress.

Methods: Participants included 108 medical trainees (response rate = 81%). Medical trainees were recruited from a rural Pennsylvanian teaching hospital and asked to complete a voluntary and anonymous electronic survey. Multiple linear regression was used to examine the association between supervisory alliance and burnout and distress, while controlling for average hours worked and slept.

Results: Results suggested that supervisory alliance was associated with burnout, distress, and self-esteem among medical trainees. **Conclusion:** Given the high rates of depression and burnout among medical providers, it may be helpful to understand the factors that may impact medical trainee's distress and esteem. Future longitudinal research might examine the role of the supervisory alliance over time, and whether strong mentorship and guidance may serve to protect trainees from burnout throughout training and into their career. Keywords: medical residents, supervisory alliance, burnout

Supervision in medical training is considered essential to the learning process and is recognized among accrediting agencies as necessary for the process of certification and graduation. The predominant training model of supervision in graduate medical education is an apprenticeship model, which requires a more experienced professional (eg, attending physician) who ensures that a supervise is provided opportunities to develop clinical competency.¹

There are several functions of clinical supervision, including managerial, educational, and restorative (eg, support and validation).² The supervisory alliance has been identified as a key ingredient of effective supervision, ^{3–6} regardless of the type of treatment, population, or supervision model being used. While there are several predominant conceptualizations of supervisory alliance, generally, it is considered a collaboration between a supervisor and supervisee and includes perceptiveness, responsiveness of the supervisor, a state of rapport, and specific learning tasks that allow the individual to work towards a goal.³

The supervisory alliance has been conceptualized by Bordin⁷ as a pan-theoretical model that is comprised of three elements: (a) the bond between the supervisor and supervisee, (b) collaborative goals that guide supervision and (c) mutually agreed upon tasks that serve the purpose of working towards supervision goals. He specified eight types of goals that might be used to facilitate this process, including, but not limited to increasing awareness of self and impact on the process, mastery of skills, and overcoming personal and intellectual obstacles of learning.

Much of the research on supervisory alliance is derived from psychotherapy supervision, with graduate trainees in psychology, counseling, or social work programs. Generally, a strong supervisory alliance is associated with many favorable variables, including supervise self-efficacy, self-esteem, and well-being. Self-esteem, or the positive or negative beliefs that one holds about themselves and their abilities, has been identified as a variable that impacts academic engagement, and serves as a protective factor against burnout.⁸ Poorer alliance is associated with higher perceived stress and burnout, (cf, 3) two

factors recognized as major concerns for the healthcare system.⁹ In academic settings, there is a reciprocal relationship between self-esteem and academic performance, such that self-esteem predicts academic performance and academic performance also influences self-esteem.⁸

Limited research has explored the role of the supervisory alliance in graduate medical education. One study explored the impact of the educational alliance on medical student's use of educational feedback.¹⁰ Others have highlighted ways in which medical educators might consider feedback from an "educational alliance framework" to enhance the educational relationship^{11,12} or to include trainees in the co-creation of professional activities.¹³ These perspectives highlight the potential import of the medical educator in feedback processes, but there is a dearth of research that quantitatively explores the supervisory alliance or impact on the medical trainee. Understanding and exploring the role of the supervisory alliance in medicine is in its infancy compared to other disciplines, despite Common Program Requirements (ACGME; see https://www.acgme.org/programs-and-institutions/programs/common-program-requirements/) that highlight a set of standards that facilitate a learning environment for resident and fellow physicians under the supervision of qualified professionals, who "give value, context, and meaning to those interactions".

Understanding how the supervisory alliance impacts trainees is important for several reasons. The medical training environment can promote a culture of stoicism and self-condemnation.¹⁴ The rates of burnout, depression, and suicidal ideation are higher among physicians compared to other professions, and some research has suggested that medical residents may struggle even more compared to practicing physicians.¹⁵ The impact of burnout among providers is far-reaching, and results in physician turnover, increased medical errors, and lower patient satisfaction scores.^{16–20,25–33} While it is known that the medical training environment hosts high rates of burnout among residents and providers, little research has examined the role of supervisory alliance in regard to burnout and distress. Given the negative impact of burnout and distress throughout one's medical career, as well as projected physician shortages related to turnover and burnout,²¹ research that attends to potential protective factors (ie, self-esteem) and their intersection with training is warranted.

This study aimed to apply previous models of supervisory alliance to medical education, and explore associations between educational alliance and trainee self-esteem, burnout and distress. Consistent with previous research that has been conducted on psychology doctoral trainees, it was expected that medical trainees would have similar benefits of supervisory alliance as those in other training settings. It was hypothesized that supervisory alliance would be positively associated with self-esteem and negatively associated with distress and burnout.

Materials and Methods

Participants

Medical trainees were recruited from a convenience sample at a rural Pennsylvanian teaching hospital. Robert Packer Hospital is a 267-bed tertiary care teaching hospital with a Level I Trauma Center. The hospital hosts seven medical residency programs and four fellowship programs. Participants were asked to complete a voluntary and anonymous electronic survey developed using Survey Monkey © in exchange for a \$5 food voucher. They were approached by trained research assistants during established work meetings, and a waiver of consent was obtained from the Guthrie Research Institutional Review Board. Trainees were given the option to decline participation, and it was not known who completed the electronic survey. All procedures performed were considered exempt by the Institutional Review Board associated with the Guthrie Medical Group and complied with the Declaration of Helsinki.

The survey included a demographic questionnaire, a measure of self-esteem, measures of distress (burnout and the Physician Wellness Inventory subscale), self-esteem, and supervisory working alliance. The demographic questionnaire included questions related to year in program, specialty, age, race/ethnicity, and gender identity.

The Single-Item Self Esteem Scale (SISE;²²) was used as an efficient and global measure of self-esteem and is based off the Rosenberg Self-Esteem Scale (RSE;²³). Respondents indicate whether the statement "I have high self-esteem" is 1 (not very true of me) to 5 (very true of me). This measure has been identified as an efficient option to measure global self-esteem in adults.

Two measures were used to examine trainee distress and burnout. The Physician Wellness Inventory (PWI,²⁴) is a 14-item survey that examines how satisfied physicians are with their work. The distress subscale of the PWI was used to measure distress among trainees. Statements are rated from 1(strongly disagree) to 5(strongly agree). This scale has been used with

medical trainees²⁵ and internal consistency for the distress subscale in this study was 0.76. The single item, 5-choice question from the Mini- Z^{26} was used to measure burnout, has been used in previous research with medical trainee samples and has been validated against the Maslach Burnout Inventory.^{25,27}

The Brief Form of the Supervisory Working Alliance Inventory⁷ was used to assess the perceived working alliance between medical trainees and attending physicians. Language was modified to reflect medical terminology appropriate for this setting (eg, patient versus client; attending versus supervisor). This instrument includes five-items that are rated from 1(almost never) to 7(almost always) and includes two subscales related to client focus and rapport with supervisor. Total scale reliability was 0.90.

Analysis Plan

Data were cleaned and checked for errors and inconsistencies. Data were analyzed using IBM SPSS Version 25 (SPSS Inc/IBM, Chicago, IL). Sample characteristics were examined using descriptive techniques, including measures of central tendency, distribution, and variability. Multiple linear regression was used to determine whether supervisory alliance (independent variable) predicted three dependent variables including (a) self-esteem, and (b) distress (as measured by the PWI and the MiniZ) while controlling for hours worked and slept in the past two weeks. Hours worked and slept were included as co-variates in the regression analysis due to their associations with medical trainee distress, burnout, and academic efficacy.²⁸

Results

Participants included 108 medical trainees (response rate = 81%) from a rural Pennsylvanian teaching hospital. Most were working in internal medicine (n =24, 22.2%), surgery (n = 19, 17.6%), and family medicine (n = 14, 14.8%). There were more trainees that identified as male (n = 60, 55.6%) and of most respondents were in their first two years of training (n = 53, 52%). Table 1 includes demographic characteristics of the sample. Table 2 provides a summary of regression analyses.

| Characteristics | n(%) | M(SD) |
|--------------------------------|----------|-----------|
| Age | | 30.7(4.5) |
| Gender | | |
| Female | 46(42.6) | - |
| Male | 60(55.6) | - |
| Nonbinary | l (0.9) | - |
| Year ^a | | |
| Medical Student* | 8(7.4) | - |
| PGYI | 28(25.9) | - |
| PGY2 | 25(23.1) | - |
| PGY3 | 23(21.3) | - |
| PGY4 | 10(9.3) | - |
| PGY5 | 8(7.4) | |
| Race/Ethnicity | | - |
| American Indian/Alaskan Native | 2(1.9) | - |
| Asian or Pacific Islander | 47(43.5) | - |
| Black or African American | 4(3.7) | - |
| Hispanic/Latino | 4(3.7) | - |
| White/Caucasian | 41(38.0) | - |
| Other | 10(9.3) | |

| Table | Demographic | Information | (N = 108) |
|-------|-------------|-------------|-----------|
| Table | | mormation | (1 - 100) |

(Continued)

| Table I (| Continued) |
|-----------|------------|
|-----------|------------|

| Characteristics | n(%) | M(SD) |
|-------------------|----------|-------|
| Specialty | | |
| Medical Student | 8(7.4) | - |
| Anesthesiology | 6(5.6) | - |
| Cardiovascular | 5(4.6) | - |
| Emergency Med | 14(13.0) | - |
| Family Med | 16(14.8) | - |
| Gastroenterology | 6(5.6) | - |
| Internal Med | 24(22.2) | - |
| Orthopedics | 6(5.6) | - |
| Pulmonary Disease | 2(1.9) | - |
| Surgery | 19(17.6) | - |

Notes: *Medical Students were in their third or fourth year of medical training.

Abbreviation: ^a PGY= Post Graduate Year.

Table 2RegressionAnalysisSummaryforSupervisoryAlliancePredictingDistress,Burnout,andSelf-Esteem(n = 108)

| Variable | β | t | Þ | sr ² |
|-----------------|-------|-------|-------|-----------------|
| Self-esteem | 0.24 | -2.27 | 0.03 | 0.06 |
| Distress (PWI)* | -0.38 | -3.81 | <0.01 | 0.14 |
| Mini Z | -0.46 | -4.47 | <0.01 | 0.20 |

Abbreviation: *PWI = Physician Wellness Inventory.

Distress and Burnout

Multiple linear regression was used to examine the association between supervisory alliance and burnout and distress, while controlling for average hours worked and slept. Hours worked and slept were included as co-variates in the regression analysis due to their associations with medical trainee distress, burnout, and academic efficacy.²⁸ Total supervisory alliance independently predicted burnout as measured by the MiniZ ($\beta = -0.46$, t(90) = -4.75, p < 0.01), as well as distress measured by the Physician Wellness Inventory ($\beta = -0.38$, t(89) = -3.81, p < 0.01). That is, those that reported greater supervisory alliance reported less distress and lower ratings of burnout.

Self Esteem

Multiple linear regression was used to examine the association between supervisory alliance and self-esteem (using the SISES), while controlling for average hours worked and slept. Total supervisory alliance independently predicted ratings of self-esteem ($\beta = 0.24$, t(90) = -2.27, p = 0.03). Medical trainees who reported a stronger supervisory alliance also had higher ratings of self-esteem.

Discussion

This study highlighted a negative association between supervisory alliance and distress or burnout. Medical trainees who reported a stronger alliance with their attending physician reported less burnout and distress, despite the number of hours they were working or sleeping. Our findings do not allow for interpretation beyond this association, and understanding the directional nature of these variables may be useful in structuring training opportunities. That is, it is unclear whether trainees who are less burnt out or distressed are more capable of developing an alliance with supervisors, whether positive supervisory relationships decrease distress over time, or whether the relationship of these constructs is

bidirectional. Regardless, given the global epidemic of burnout in healthcare, attending to variables that may impact burnout, or serve as "red flag" indicators is warranted. Future research might explore supervisory experiences and alliance as another factor that impacts medical providers' burnout trajectory in medicine.

Although it has less national and global attention than burnout, understanding aspects that promote high-quality teaching and supervision in medicine is also warranted. While the role of teaching and supervision in medicine is recognized within major accrediting agencies like the Accreditation Council for Graduate Medical Education (ACGME), there is limited empirical evidence that explores the connections between supervision and trainee outcomes, or best practices related to providing supervision. As the medical environment shifts to require that physicians have greater clinical output in smaller time frames,⁹ understanding the mechanisms behind good supervision is essential. In a monetarily driven system, the medical environment may not readily recognize work that is not easily reimbursable (eg, building rapport with supervises). Identifying the impact of supervision and teaching may provide additional support to enhance the learning environment and protect supervisory environments. While our study is limited by its inability to draw conclusions about causal effects and mechanisms for best practices, it does highlight an association between supervisory alliance and positive and negative attributes, consistent with research in other specialties.³

Findings suggested that supervisory alliance is associated with self-esteem among medical trainees. The importance of understanding variables that may impact trainee self-esteem is two-fold. First, it is understood that there are significant systemic drivers of burnout that require systemic change (rather than individual change) to adequately address this epidemic.^{29–31} Even though systemic change is important, individuals who have higher self-esteem may be better equipped to face challenges related to burnout across their careers. Given the high rates of depression and burnout among medical providers at various points in their careers, it may be useful to understand how to supervisory relationship may promote esteem and serve as a protective factor for burnout.

Second, self-esteem has been associated with numerous positive outcomes, including enhanced learning outcomes (see³² for review). Individuals who have higher self-esteem are more likely to engage in behaviors that confirm positive self-views or contribute to their success.³³ Self-esteem may also be associated with self-efficacy, which increases motivation, engagement in tasks, and acts as a coping resource when there is academic or work failure.³⁴ While there is limited research that examines the role of self-esteem in the academic outcomes of medical students and residents, it is reasonable to assume that medical trainees are not immune to the same learning processes as other learners. Our study suggests that there is an association between supervisor alliance and selfesteem, and it is a first step in exploring this topic. Future research might examine the relationships between these constructs by conducting studies that examine the impact of supervisory alliance on self-esteem and academic achievement in medical environments over time.

Limitations

There were numerous limitations to this study. While the response rate of residents was high (80%), residents may have provided socially desirable answers that were not truly reflective of their experiences. This sample included one medical institution which may limit its generalizability. Finally, this survey was cross-sectional and cannot make inferences about causality or impact of supervisory alliance over time.

Conclusions

This study highlighted associations between supervisory alliance, burnout, distress and self-esteem among medical trainees. While this study is limited by its correlational design, understanding factors that may facilitate or protect against burnout is essential for the profession and the patients it serves. In addition, understanding factors that facilitate learning processes among medical trainees is important to maximize learning environments. Future longitudinal research might examine the role of the supervisory alliance over time, and whether strong mentorship and guidance may serve to protect trainees from burnout throughout training and into their career.

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