

THE MEDIATING ROLE OF HOPE IN THE ASSOCIATION BETWEEN RESILIENCE AND PSYCHOLOGICAL DISTRESS AMONG CLINICAL CLERKSHIP STUDENTS

PERAN HARAPAN SEBAGAI MEDIATOR DALAM HUBUNGAN ANTARA RESILIENSI DAN DISTRES PSIKOLOGIS PADA MAHASISWA PROGRAM PENDIDIKAN PROFESI DOKTER

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ABSTRACT

Medical students undertaking clinical clerkships face substantial academic, clinical, and emotional demands that may increase their vulnerability to psychological distress. This study examined whether hope statistically mediated the association between resilience and psychological distress among clinical clerkship students. Using a cross-sectional correlational design, 188 participants were recruited through nonprobability voluntary-response sampling. Data were analyzed using an observed-variable path model in JASP Version 0.16.4. The results indicated that hope fully mediates the relationship between resilience and psychological distress. Resilience was positively associated with hope ($\beta = .781, p < .001$), while hope was negatively associated with psychological distress after controlling for resilience ($\beta = -.681, p < .001$). The component regression models indicated that resilience explained 61.0% of the variance in hope ($R^2 = .610$), whereas resilience and hope jointly explained 38.8% of the variance in psychological distress ($R^2 = .388$). The standardized indirect effect of resilience on psychological distress through hope was significant ($\beta = -.532, p < .001$). After including hope in the model, the direct relationship between resilience and psychological distress was not significant ($\beta = .076, p = .492$). These findings support the hypothesized indirect relationship through hope. Given the cross-sectional design, the results should be interpreted as a statistically indirect association rather than evidence of temporal or causal mediation processes. Overall, the findings highlight the relevance of hope in efforts to promote psychological well-being among medical students.

Keywords: Clinical clerkship students, hope, psychological distress, resilience

ABSTRAK

Mahasiswa yang menjalani pendidikan profesi dokter menghadapi tuntutan akademik, klinis, dan emosional yang dapat meningkatkan kerentanan terhadap distres psikologis. Penelitian ini menguji apakah harapan secara statistik memediasi hubungan antara resiliensi dan distres psikologis pada mahasiswa program pendidikan profesi dokter. Menggunakan desain cross-sectional correlational, sebanyak 188 partisipan direkrut melalui teknik pengambilan sampel sukarela nonprobabilitas. Data dianalisis menggunakan model jalur dengan variabel teramati dalam JASP Versi 0.16.4. Hasil menunjukkan bahwa harapan memediasi secara penuh hubungan antara resiliensi dan distres psikologis. Resiliensi berhubungan positif dengan harapan ($\beta = .781, p < .001$),

sedangkan harapan berhubungan negatif dengan distres psikologis setelah memperhitungkan resiliensi ($\beta = -.681, p < .001$). Model regresi komponen menunjukkan bahwa resiliensi menjelaskan 61,0% varians harapan ($R^2 = .610$), sedangkan resiliensi dan harapan secara bersama-sama menjelaskan 38,8% varians distres psikologis ($R^2 = .388$). Hubungan tidak langsung terstandar antara resiliensi dan distres psikologis melalui harapan signifikan ($\beta = -.532, p < .001$). Setelah harapan dimasukkan ke dalam model, hubungan langsung antara resiliensi dan distres psikologis tidak signifikan ($\beta = .076, p = .492$). Temuan ini mendukung hubungan tidak langsung yang dihipotesiskan melalui harapan. Mengingat desain potong lintang, hasil ini perlu ditafsirkan sebagai hubungan tidak langsung secara statistik, bukan bukti proses mediasi temporal atau kausal. Temuan ini juga menegaskan relevansi harapan dalam upaya mendukung kesejahteraan psikologis mahasiswa.

Kata Kunci: Distres Psikologis, harapan, mahasiswa program pendidikan profesi dokter, resiliensi

INTRODUCTION

Medical students are an academic group vulnerable to experience severe psychological distress. This psychological distress has been documented across the entire spectrum of clinical students, from undergraduate clinical training to specialist residency programs. According to a systematic literature review by Aljuwaiser et al. (2024) investigating the worldwide prevalence of common mental health problems among junior doctors and medical students, common mental health problems such as depression, anxiety, stress, burnout, and suicidal ideation is high among junior doctors and medical students. It is argued that the prevalence is higher compared to the general population (Aljuwaiser et al., 2024). Additionally, in a nation-wide survey conducted by The Indonesian Ministry of Health in 2024, there are 2,716 (22.4%) specialist residents who experienced symptoms of depression, ranging from mild to severe. Furthermore, in the past 2 weeks, 3.3% of residents felt they would be better off dead or wanted to harm themselves in some way (Sagita, 2024). Taken together, these findings confirm that psychological distress among medical students is a pressing concern globally, and Indonesia is no exception.

Clinical education is widely recognized as one of the most demanding academic environments, characterized by high academic workload, prolonged study duration, and significant emotional demands. Many studies in Indonesia further emphasized this reality. A descriptive cross-sectional study by Hediatty et al. (2023) concluded that 52.6% of medical students in The Faculty of Medicine and Health Sciences of Universitas Jambi experience moderate-level stress mostly related to their academic tenure. Similarly, a

study by Rahmayani et al. (2019) identified academic burden being the most dominant stressor for medical students. While high levels of stress due to various academic-related demands might seem to come with the territory for medical students, it could also be argued that such an environment may contribute to further issues relating to mental health problems. A cross-sectional study conducted in Universitas Tarumanegara showed that 49.9% of medical students showed symptoms of mental disorders after being screened using The Self Report Questionnaire (SRQ-20) (Biromo et al., 2023). The demographic data also showed that 86.3% had no prior mental disorder(s) (Biromo et al., 2023). These results show a curious gap between the demographic data and the result of the SRQ-20 screening, arguably revealing that the medical education environment itself may play a part in the emergence of mental health problems even among students without prior vulnerability.

Studies have shown that psychological distress among medical students is associated with anxiety and depression, sleeping problems, substance abuse, and even suicidal ideation (Yusoff et al., 2012). In their medical practice, distress can negatively impact students' ability to develop rapport with patients, maintain focus, and make sound clinical decisions, all of which bear directly on their future performance as physicians (Yusoff et al., 2012). These consequences underscore the importance of identifying protective factors that can buffer students against the psychological toll of their education. One such factor is resilience. Resilience is defined as an individual's ability to endure and recover from pressure or adversity (Sanjaya et al., 2024; Connor & Davidson, 2003). Empirical evidence consistently shows that individuals with higher resilience exhibit lower levels of psychological distress, in part because resilience supports emotion regulation and reduces reactivity to daily stress (Tian & Hong, 2014; Bacchi & Licinio, 2017; Ong et al., 2006).

The protective role of resilience against psychological distress has been well-established in the literature. However, questions remain about the mechanism through which this relationship operates. Several studies suggest that resilience does not directly reduce distress on its own, but rather through other underlying psychological conditions. Zhang et al. (2023) demonstrated that the relationship between resilience and psychological distress operates through mental health literacy, serving as a significant mediator in this relationship. Satıcı (2016), on the other hand, found that resilience

predicted hope, and that hope fully mediated the relationship between resilience and subjective well-being. Among the presented mediations, hope emerges as a particularly relevant candidate. Hope has been independently linked to lower levels of psychological distress in prior literature (Ong et al., 2006). Additionally, Lin et al. (2022) found that resilient individuals have higher hope and lower hopelessness. These findings suggest that hope may serve as the psychological bridge through which resilience exerts its protective effect against distress.

Hope is defined as a positive motivational state comprising two interacting components: pathway thinking, which refers to the perceived ability to formulate strategies to achieve a goal, and agency thinking, which refers to the motivation to act on those strategies (Snyder, 2002). Satici (2016) proposed that resilience facilitates the development of hopeful thinking, as individuals who are able to persist through adversity and recover from setbacks are more likely to maintain both the confidence to pursue their goals and the ability to generate strategies to reach them. In the context of clinical students, this translates to a student with high resilience being better equipped to devise strategies for navigating the demands of medical training, all of which help sustain hope in a high-pressure environment. Hope, in turn, reduces psychological distress: Ong et al. (2006) found that individuals with higher hope showed diminished stress reactivity and more effective emotional recovery, while those low in hope were more vulnerable to the accumulating effects of daily stress.

Whether hope specifically mediates the relationship between resilience and psychological distress remains underexplored, particularly among clinical clerkship students. The studies establishing hope's role in the resilience–distress relationship, including Satici (2016), whose findings were drawn from Turkish undergraduate students, and Ong et al. (2006), whose work was conducted with older adults, were carried out in non-medical populations. No study to date has tested this mediation model among Indonesian clinical clerkship students (often referred to as ‘co-assistant’ or ‘co-ass’), a population whose stressor profile is shaped by the distinct demands of clinical professional training. Examining this model within the clinical clerkship students context, therefore extends the existing literature by testing whether hope's mediating role holds under these conditions, which is a context that has received limited attention in the resilience–hope literature. Practically, confirming hope as a mediator would provide a

theoretically grounded basis for designing targeted psychological interventions in Indonesian medical education, shifting the focus from resilience-building alone toward cultivating hope as an active mechanism for distress reduction.

To address this gap, the present study examines hope as a mediator in the relationship between resilience and psychological distress among Indonesian koas students. Based on the theoretical framework and empirical evidence outlined above, the following hypotheses are proposed: (H1) resilience is positively associated with hope; (H2) hope is negatively associated with psychological distress; (H3) resilience is negatively associated with psychological distress; and (H4) hope mediates the relationship between resilience and psychological distress among clinical clerkship students.

METHODS

This study employed a cross-sectional correlational design to examine the associations among resilience, hope, and psychological distress and to test whether hope statistically mediated the association between resilience and psychological distress. Participants were recruited using a nonprobability voluntary-response sampling approach. The online survey link was disseminated through Instagram and WhatsApp from June 3 to June 7, 2024, targeting clinical clerkship students enrolled at universities in Indonesia. Eligible participants were required to be currently undertaking clinical clerkship training and to be at least 21 years old. Data was collected online using Google Forms. Before completing the questionnaire, prospective participants were presented with a research information sheet describing the research team, study objectives, participation procedures, an estimated completion time of 7–12 minutes, the voluntary nature of participation, potential risks and benefits, data confidentiality, and the right to discontinue participation at any time without penalty. Participants who agreed to take part provided digital informed consent and were instructed to complete and submit the questionnaire only once.

The eligibility screening was subsequently conducted to confirm that respondents were currently enrolled in clinical clerkship training, whereas age eligibility was verified using the demographic information provided by the respondents. Only respondents who met the inclusion criteria were directed to the demographic and study-measure sections

of the questionnaire. A total of 206 responses were initially obtained. Five responses were excluded during the initial eligibility screening because the respondents did not meet the study criteria. A further 13 responses were excluded during data cleaning because they did not satisfy the eligibility or response-quality requirements for inclusion in the analyses. Consequently, 188 participants were retained in the final analytic sample. Because recruitment relied on a voluntary, nonprobability online sample, the study may have been susceptible to self-selection bias, which should be considered when interpreting and generalizing the findings (Bethlehem, 2010). The study protocol was approved by the Research Ethics Committee of the Faculty of Psychology, Universitas Gadjah Mada (Approval No. 4400/UN1/FPSi.1.3/SD/PT.01.04/2024; May 29, 2024).

The final analytic sample comprised 188 clinical clerkship students from eight universities in Indonesia. Most participants were women ($n = 156$, 83.0%), while 32 participants (17.0%) were men. Participants ranged in age from 21 to 28 years ($M = 23.19$, $SD = 1.30$). Forty-four participants (23.4%) were affiliated with public universities, whereas 144 participants (76.6%) were affiliated with private universities. Recruitment was institutionally concentrated, with 125 participants (66.5%) originating from a single private university. This uneven institutional distribution should be considered when interpreting the representativeness and generalizability of the findings across clinical clerkship programs in Indonesia. Its potential influence was further examined through a covariate-adjusted sensitivity analysis comparing participants from the dominant institution with those from the other seven universities.

The demographic information collected included gender, age, university affiliation, and semester of study. However, semesters were assessed using an open-ended item that did not specify whether participants should report their semester within the overall medical education curriculum or specifically within the clinical clerkship stage. Consequently, participants provided heterogeneous responses, including semester numbers, years of study, training levels, and general descriptions of their educational stage. Because these responses could not be interpreted and classified consistently, semester data were excluded from the descriptive and inferential analyses. Information regarding participants' current clinical rotation, duration of clinical clerkship training, and clinical placement site was not collected.

Data collection employed three measurement instruments. Psychological distress was measured using the Indonesian version of the 10-item Kessler Psychological Distress Scale (K10), originally developed by Kessler et al. (2002). The Indonesian item wording used in the present study was based on the version validated by Tran et al. (2019) and subsequently used by Savitri et al. (2025). The K10 assesses the frequency of nonspecific anxiety- and depression-related symptoms experienced during the preceding 30 days, including nervousness, restlessness, hopelessness, sadness, fatigue, and worthlessness. An example item is, “During the past 30 days, how often did you feel nervous?” Each item was rated on a five-point frequency scale ranging from 1 (never) to 5 (always). Item scores were summed to produce a total score ranging from 10 to 50, with higher scores indicating greater psychological distress. For descriptive purposes, K10 total scores were classified into four psychological distress ranges: low (10–15), moderate (16–21), high (22–29), and very high (30–50), following Andrews and Slade (2001). Savitri et al. (2025) reported item-discrimination coefficients ranging from .287 to .727 and a Cronbach’s alpha coefficient of .859. In the present sample, the K10 demonstrated excellent internal consistency, with Cronbach’s $\alpha = .943$, 95% CI [.931, .956], and item–rest correlations ranging from .645 to .831.

Resilience was assessed using the 10-item Connor–Davidson Resilience Scale (CD-RISC-10). The CD-RISC-10 was derived from the original 25-item Connor–Davidson Resilience Scale developed by Connor and Davidson (2003) and psychometrically refined as a unidimensional measure by Campbell-Sills and Stein (2007). The Indonesian-language item wording used in the present study was reproduced from the version previously administered to Indonesian medical students by Amir and Rumiani (2023). The scale consists of 10 positively worded items, with an example item being, “I am able to adapt to change.” Participants rated each statement on a five-point scale ranging from 1 (never) to 5 (always). Item scores were summed to obtain a total score ranging from 10 to 50, with higher scores indicating greater resilience. Amir and Rumiani (2023) reported item-discrimination coefficients ranging from .420 to .625 and a Cronbach’s alpha coefficient of .724. In the present sample, the CD-RISC-10 demonstrated excellent internal consistency, with Cronbach’s $\alpha = .930$, 95% CI [.911, .948], and item–rest correlations ranging from .659 to .779.

Hope was measured using the Indonesian Hope Scale (IHS), developed and validated by Asiah et al. (2022) based on Snyder's hope theory. The IHS comprises 20 items representing two dimensions of hope: pathways thinking, which refers to an individual's perceived ability to identify strategies for achieving goals, and agency thinking, which refers to the motivation and determination to pursue those goals. The instrument contains 10 positively worded and 10 negatively worded items. An example positively worded item is, "I can think of various ways to overcome obstacles in life." Participants responded using a five-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). The negatively worded items—Items 3, 6, 10, 12, 13, 14, 15, 16, 18, and 20—were reverse-scored before the item scores were summed. Total scores could range from 20 to 100, with higher scores indicating greater hope. Asiah et al. (2022) reported a Cronbach's alpha coefficient of .82 in the scale-development study. In the present sample, the IHS demonstrated good internal consistency, with Cronbach's $\alpha = .906$, 95% CI [.887, .926], and item-rest correlations ranging from .403 to .681.

Data screening and statistical analyses were performed using JASP (Version 0.16.4; JASP Team, 2022). Prior to hypothesis testing, the data were screened for missing values, out-of-range scores, distributional characteristics, and potentially influential observations. The distributions of the composite scores were evaluated using skewness, kurtosis, Shapiro-Wilk tests, boxplots, and Q-Q plots. The assumptions relevant to the two component regression models were subsequently examined: hope regressed on resilience, and psychological distress regressed on resilience and hope. Linearity and homoscedasticity were inspected using residual-versus-predicted plots, whereas residual normality was evaluated using Q-Q plots of standardized residuals. Multicollinearity in the psychological distress model was assessed using tolerance and variance inflation factor values. Standardized residuals and Cook's distance were examined to identify potentially influential observations. The two component regression models were also estimated separately to obtain interpretable coefficients of determination (R^2) for hope and psychological distress.

A single-mediator observed-variable path model was estimated using the Mediation Analysis procedure within the structural equation modeling module in JASP. The model was specified using observed composite scores within the broader structural equation modeling framework (Rosseel, 2012), with resilience as the predictor, hope as the

mediator, and psychological distress as the outcome. Parameter estimates were obtained using maximum likelihood estimation. The statistical significance of the indirect effect was evaluated using a 95% bias-corrected percentile bootstrap confidence interval, with 5,000 bootstrap resamples requested. The indirect effect was considered statistically significant when the bootstrap confidence interval did not include zero (Preacher & Hayes, 2008). Standardized estimates were reported for the individual paths and the direct, indirect, and total effects.

The primary mediation model did not include demographic covariates because it was specified to directly test the hypothesized indirect association among resilience, hope, and psychological distress. To examine whether the findings were robust after accounting for measured demographic and institutional characteristics, two covariate-adjusted sensitivity models were subsequently estimated. The first sensitivity model adjusted for age, gender, and university type (public vs. private). The second adjusted for age, gender, and recruitment from the dominant institution, defined as the single private university that contributed 66.5% of the analytic sample, compared with the other seven universities. University type and dominant-institution status were examined in separate models because the dominant institution was a private university and the two indicators therefore contained substantially overlapping information. The direction, magnitude, statistical significance, and bootstrap confidence intervals of the direct, indirect, and total effects were compared across the primary and sensitivity models. Given the cross-sectional design, the indirect effect was interpreted as a statistical indirect association rather than evidence of a temporal or causal mediation process (Maxwell & Cole, 2007).

RESULTS

Preliminary Data Screening

No missing values were identified in the item-level data or in the composite scores of resilience, hope, and psychological distress; therefore, all 188 participants in the final analytic sample were included in the analyses. Shapiro–Wilk tests indicated statistically significant deviations from normality for psychological distress, $W = .959$, $p < .001$; hope, $W = .981$, $p = .013$; and resilience, $W = .971$, $p < .001$. Nevertheless, skewness values ranged from $-.308$ to $.397$, and kurtosis values ranged from $-.752$ to $.044$, suggesting that the departures from univariate normality were modest in magnitude.

Because the mediation model comprised two regression equations, the distributions and patterns of the model residuals were also examined. Visual inspection of the standardized residual Q–Q plots did not reveal marked departures from residual normality. Similarly, the residual-versus-predicted plots did not show clear patterns suggesting substantial violations of linearity or homoscedasticity. For the regression of hope on resilience, standardized residuals ranged from -2.708 to 2.559 . For the regression of psychological distress on resilience and hope, standardized residuals ranged from -2.371 to 2.839 . Thus, no standardized residual exceeded an absolute value of 3. No case exceeded the prespecified Cook's distance criterion of 1. In addition, the collinearity statistics did not indicate severe multicollinearity in the psychological distress model, as resilience and hope each had a tolerance value of .390 and a variance inflation factor of 2.565.

Categorization of Psychological Distress

Using the four-level K10 classification based on Andrews and Slade (2001), 70 participants (37.2%) were classified in the very high psychological distress range. This was followed by 41 participants (21.8%) in the high range, 40 participants (21.3%) in the moderate range, and 37 participants (19.7%) in the low range. Overall, 111 participants (59.0%) were classified in the high or very high psychological distress ranges. The distribution of K10 psychological distress categories is presented in Table 1.

Table 1. *Categorization of Psychological Distress*

Category	K10 Total Score	Frequency	Percentage
Low Distress	10-15	37	19.7%
Moderate Distress	16-21	40	21.3%
High Distress	22-29	41	21.8%
Very High Distress	30-50	70	37.2%
Total		188	100%

Categorization of Hope

Based on the subject grouping norms (Table 2), the hope category predominantly showed moderate (63.8%), high (19.7%), and low levels of hope (16.5%). The grouping of hope is presented in the table 2.

Table 2. *Categorization of Hope*

Category	Frequency	Percentage
Low	31	16.5%
Moderate	120	63.8%
High	37	19.7%
Total		100%

Categorization of Resilience

Based on the subject grouping norms (Table 3), the percentages in the resilience category were predominantly moderate (73.9%), high (15.4%), and low resilience category (10.6%). The distribution of resilience is presented in the table 3.

Table 3. *Categorization of Resilience*

Category	Frequency	Percentage
Low	20	10.6%
Moderate	139	73.9%
High	29	15.4%
Total		100%

Descriptive Statistics and Bivariate Correlations

Table 4 presents the descriptive statistics and bivariate correlations among psychological distress, hope, and resilience. The mean psychological distress score was 26.02 (SD = 10.32), with observed scores ranging from 10 to 50. The mean hope score was 74.30 (SD = 12.84), with scores ranging from 39 to 99, whereas the mean resilience score was 36.92 (SD = 7.62), with scores ranging from 13 to 50.

Spearman's correlation analysis indicated that psychological distress was significantly and negatively correlated with hope, $\rho = -.620$, $p < .001$, and resilience, $\rho = -.474$, $p < .001$. Hope was significantly and positively correlated with resilience, $\rho = .775$, $p < .001$. Thus, participants with higher resilience and hope scores tended to report lower psychological distress, while participants with higher resilience also tended to report higher hope.

Table 4. *Descriptive Statistics and Spearman Correlations Among the Study Variables*

Variable	M	SD	Min	Max	1	2	3
Psychological Distress	26.02	10.32	10	50	—		
Hope	74.30	12.84	39	99	-.620***	—	
Resilience	36.92	7.62	13	50	-.474***	.775***	—

Note. $N = 188$. Correlation coefficients are Spearman's rho (ρ). *** $p < .001$.

Hypothesis Testing

A mediation analysis was conducted to examine the role of hope as a mediator in the relationship between resilience and psychological distress in clinical clerkship students. The results of the hypothesis testing are shown on table 5.

Table 5. *Standardized Direct, Indirect, and Total Effects in the Mediation Model*

	Path	Standardized estimate β	SE	z	95% BC Bootstrap CI	p
Path a	Resilience → Hope	.781	.025	31.20	[.725, .825]	< .001
Path b	Hope → Psychological Distress	-.681	.099	-6.86	[-.861, -.471]	< .001
Direct effect (c')	Resilience → Psychological Distress	.076	.114	.67	[-.163, .285]	.501
Indirect effect (ab)	Resilience → Hope → Psychological Distress	-.532	.078	-6.82	[-.681, -.374]	< .001
Total Effect (c)	Resilience → Psychological Distress	-.455	.063	-7.18	[-.573, -.323]	< .001

Note. $N = 188$. β represents the standardized estimate. BC = bias-corrected. Although 5,000 bootstrap resamples were requested, the confidence intervals were based on 4,992 successfully estimated resamples.

Resilience was significantly and positively associated with hope, $\beta = .781$, $SE = .025$, $z = 31.20$, $p < .001$, 95% bias-corrected bootstrap CI [.725, .825]. In turn, hope was significantly and negatively associated with psychological distress after accounting for resilience, $\beta = -.681$, $SE = .099$, $z = -6.86$, $p < .001$, 95% bias-corrected bootstrap CI [-.861, -.471]. The component regression models indicated that resilience explained 61.0% of

the variance in hope ($R^2 = .610$), whereas resilience and hope jointly explained 38.8% of the variance in psychological distress ($R^2 = .388$).

The standardized indirect association between resilience and psychological distress through hope was negative and statistically significant, $\beta = -.532$, $SE = .078$, $z = -6.82$, $p < .001$, 95% bias-corrected bootstrap CI $[-.681, -.374]$. Because the confidence interval did not include zero, the hypothesized indirect association through hope was supported. In terms of magnitude, the standardized indirect estimate indicated that a one-standard-deviation higher resilience score was statistically associated with an estimated .532-standard-deviation lower psychological distress score through its association with hope. Thus, higher resilience was associated with higher hope, which, in turn, was associated with lower psychological distress.

After hope was included in the model, the standardized direct association between resilience and psychological distress was small and statistically nonsignificant, $\beta = .076$, $SE = .114$, $z = .67$, $p = .501$, 95% bias-corrected bootstrap CI $[-.163, .285]$. In contrast, the standardized total association between resilience and psychological distress was significant and negative, $\beta = -.455$, $SE = .063$, $z = -7.18$, $p < .001$, 95% bias-corrected bootstrap CI $[-.573, -.323]$. The magnitude of the indirect estimate was considerably greater than that of the remaining direct estimate, indicating that the association between resilience and psychological distress in the specified model was predominantly represented by the indirect pathway through hope.

Overall, the significant indirect effect and the nonsignificant direct effect supported the hypothesized indirect association between resilience and psychological distress through hope. Specifically, higher resilience was associated with higher hope, and higher hope was associated with lower psychological distress. Given the cross-sectional design, this pattern should be interpreted as a statistical indirect association rather than evidence of a temporal or causal mediation process.

Covariate-Adjusted Sensitivity Analyses

Two sensitivity analyses were conducted to examine whether the estimated indirect association was robust to adjustment for demographic and institutional characteristics. In the first model, which adjusted for age, gender, and university type, the standardized indirect association between resilience and psychological distress through hope

remained statistically significant, $\beta = -.532$, $SE = .081$, $z = -6.584$, $p < .001$, 95% bias-corrected bootstrap CI $[-.700, -.382]$. The direct association remained nonsignificant, $\beta = .074$, $p = .512$, whereas the total association remained significant and negative, $\beta = -.458$, $p < .001$.

The second model adjusted for age, gender, and recruitment from the dominant university. The indirect association remained statistically significant and was virtually unchanged in magnitude, $\beta = -.531$, $SE = .079$, $z = -6.699$, $p < .001$. The direct association remained nonsignificant, $\beta = .075$, $p = .500$, whereas the total association remained significant and negative, $\beta = -.457$, $p < .001$. None of the adjusted demographic or institutional covariates was significantly associated with resilience, hope, or psychological distress in either sensitivity model. Overall, the substantive conclusion of the primary mediation model was unchanged after adjustment for the measured demographic and institutional characteristics.

DISCUSSION

This study aimed to examine the role of hope as a mediator in the relationship between resilience and psychological distress among students in the clinical clerkship Program. The findings revealed that hope fully mediated the relationship between resilience and psychological distress among clinical clerkship students. Specifically, the direct effect of resilience on psychological distress was non-significant, whereas the indirect effect through hope was significant. These findings suggest that resilience is associated with reduced psychological distress only when hope is present as an underlying cognitive mechanism.

Theoretically, these findings reinforce Snyder (2002), that individuals with strong pathways thinking and agency thinking are more likely to experience positive outcomes and demonstrate greater capacity to cope with life challenges, adapt to adversity, and maintain subjective well-being. Accordingly, hope enables students to cope more adaptively with the pressures of professional education. In this study, hope functioned as a bridge between resilience as a psychological trait and students' psychological well-being. In other words, students with higher levels of resilience as a relatively stable personality characteristic tended to report higher levels of hope, which in turn was associated with lower levels of psychological distress.

The present findings suggest that resilience may not be directly associated with lower psychological distress among clinical clerkship students. Instead, the association between resilience and psychological distress appeared to operate through hope. This pattern may reflect the unique context of clinical clerkship training, where students are exposed to demanding academic and clinical responsibilities, prolonged working hours, and emotionally challenging situations (El-Masry et al., 2013; Rahmayani et al., 2019). Under such conditions, resilience as a personal capacity to adapt to adversity may not be sufficient by itself to buffer psychological distress. Hope, characterized by pathway thinking and agency thinking (Snyder, 2002), may provide students with clear goals, alternative strategies, and motivation to persist despite academic and clinical challenges.

Individuals with higher levels of resilience tend to report higher levels of hope when facing adversity, as they are more likely to evaluate life circumstances and perceive threatening situations from a more positive and effective perspective (Satici, 2016). Previous studies have also demonstrated that various forms of resilience, including national resilience, community resilience, and individual resilience, are positively associated with higher levels of hope during the COVID-19 pandemic (Kimhi et al., 2021). Furthermore, resilience characteristics related to attachment have been identified as significant predictors of hope among mothers of children with specific learning difficulties (Nemati, 2022). Therefore, hope may represent an important cognitive mechanism that helps explain the association between resilience and psychological distress among clinical clerkship students.

In contrast, hope exhibits a negative association with psychological distress, indicating that individuals with higher levels of hope tend to experience lower levels of psychological distress. This finding aligns with Werner (1993), who posited that hope is an essential element of resilience that helps individuals mitigate the health-related impacts of stress. Furthermore, hope reflects a more optimistic outlook on life, which collectively contributes to well-being (Magaletta & Oliver, 1999) and buffers against psychological distress among traumatized Hispanic/Latino populations (Senger & Gallagher, 2024). Moreover, hope consistently and robustly predicts coping mechanisms, well-being, depression, anxiety, and individual resilience, thereby highlighting its pivotal role in alleviating psychological distress (Marciano et al., 2022). Additionally, hope serves as a reliable predictor of psychological distress, underscoring the critical correlation

between these constructs (Senger & Gallagher, 2024). Gallagher et al. (2021) emphasized that hope predicts an individual's capacity to endure and overcome anxiety and stress-related disorders, further establishing its link to psychological well-being.

This study revealed that resilience was not directly associated with psychological distress when hope was included in the model. Several previous studies have demonstrated that the relationship between resilience and psychological distress may be influenced by various psychological and contextual factors. For example, Sun et al. (2022) reported that although resilience was negatively associated with psychological distress, its protective role may vary when individuals experience substantial stressors, such as fatigue. Similarly, Zou et al. (2016) found that resilience was associated with lower psychological distress among nurses, suggesting that resilience may function as an important protective resource. However, the present findings suggest that resilience alone may not fully explain variations in psychological distress among clinical clerkship students. Instead, hope appeared to function as an important mechanism that helps explain the association between resilience and psychological distress.

The levels of hope, resilience, and psychological distress among students in the clinical clerkship program are of paramount importance within the context of well-being. The current study revealed significant variations in hope levels, spanning low, moderate, and high categories. This finding aligns with the research of Snyder et al. (1991) and Herth (2001), which indicates that high levels of hope are associated with enhanced motivation, superior coping mechanisms, and favorable academic outcomes. These factors are highly critical within the framework of medical education. Conversely, students exhibiting low levels of hope are associated with diminished motivation, a tendency to utilize less effective coping strategies, and a lower capacity to adequately navigate challenges.

Furthermore, the majority of the students demonstrated moderate-to-high levels of resilience, serving as a protective factor against severe academic pressures and the inherent challenges of the medical profession (Bonanno, 2004; Southwick et al., 2014). Possessing resilience is crucial for students undergoing clinical clerkship training, as it represents the capacity to rebound and endure amidst distress, thereby fostering positive adaptation and individual psychological well-being (Bonanno, 2004).

Nonetheless, the results also indicated that a substantial proportion of students exhibited high and very high levels of psychological distress. This finding corroborates the studies by Dyrbye et al. (2008) and Mata et al. (2015), which reported that medical students frequently experience elevated levels of anxiety and distress, culminating in adverse effects on their mental well-being and academic performance. Underlying factors, such as heavy academic workloads, rigorous professional demands, and a deficiency in social support, are frequently identified as the primary catalysts for psychological distress among students in clinical clerkship programs.

Consequently, the findings highlight the importance of developing targeted interventions that strengthen both hope and resilience among clinical clerkship students. Faculties of medicine and teaching hospitals may implement structured programs such as goal-setting intervention, pathway thinking training, and adaptive coping skills workshops to enhance students' ability to pursue meaningful goals and manage academic challenges. In addition, clinical supervisors and mentors may facilitate reflective practice activities and mentoring programs that encourage students to reframe difficulties, build professional confidence, and strengthen resilience. Peer support groups and student counseling services may also provide accessible psychological support and promote adaptive coping strategies to reduce psychological distress. By integrating these initiatives into medical education and clinical training environments, institutions can better support students' mental well-being and professional development.

This study is subject to several limitations. First, participants were recruited through nonprobability voluntary-response sampling, which may have introduced self-selection bias and limited the external validity of the findings. The institutional distribution of the sample was also markedly uneven, with 66.5% of participants recruited from a single private university. In addition, the sample was predominantly female (83.0%). These characteristics may limit the extent to which the findings can be generalized to more institutionally diverse and gender-balanced populations of clinical clerkship students. Although the indirect association remained substantively unchanged in sensitivity analyses adjusting for age, gender, university type, and recruitment from the dominant institution, statistical adjustment does not resolve the limited institutional representativeness of the sample or account for unmeasured differences across

universities, such as institutional culture, curricular structure, workload, and clinical training environments.

Second, resilience, hope, and psychological distress were assessed exclusively using self-report questionnaires administered during the same data-collection period. This single-source measurement approach may have increased susceptibility to common method variance and response biases, including socially desirable responding and inaccurate self-perception or recall. Future studies could strengthen measurement validity by incorporating multiple data sources, such as clinician-administered assessments, behavioral indicators, or relevant academic and clinical information. Furthermore, information regarding participants' current clinical rotation, duration of clinical clerkship training, and clinical placement site was not collected. Semester data also could not be analyzed because the open-ended item did not clearly distinguish between the overall medical education curriculum and the clinical clerkship stage, resulting in heterogeneous responses that could not be classified consistently. Consequently, the study could not examine whether the observed associations varied according to the stage, type, intensity, or setting of clinical training.

Finally, the cross-sectional design prevents conclusions regarding temporal ordering and causality. Although the findings demonstrated a statistically significant indirect association between resilience and psychological distress through hope, they do not establish that resilience precedes or increases hope, or that greater hope subsequently reduces psychological distress. Longitudinal or prospective studies with repeated measurements are therefore needed to establish temporal precedence, examine changes in the study variables across clinical training, and provide a stronger test of the proposed mediation process.

CONCLUSION & RECOMMENDATIONS

This study examined the mediating role of hope in the association between resilience and psychological distress among clinical clerkship students (co-ass). The findings indicate that hope statistically mediated the association between resilience and psychological distress, with higher resilience associated with higher hope and higher hope associated with lower psychological distress. The statistical pattern further

supported full mediation, suggesting that the association between resilience and psychological distress operated through hope.

Beyond these findings, this study contributes to the positive psychology literature by highlighting hope as an important psychological resource that may help explain how resilience is associated with reduced psychological distress. The findings also contribute to the medical education literature by emphasizing the relevance of positive psychological strengths in supporting student well-being within demanding clinical training environments. These results suggest that efforts to promote both resilience and hope may be valuable components of student support initiatives in medical education.

The findings suggest that interventions aimed at promoting student well-being should target both resilience and hope. Medical education institutions may consider implementing programs that strengthen resilience through mentoring, supportive learning environments, and stress-adaption training. In addition, interventions designed to enhance hope, such as goal-setting activities, agency-building strategies, and emotional regulation training, may help reduce psychological distress among medical students.

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