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CORE SELF-EVALUATION, PSYCHOLOGICAL DISTRESS, COPING STRATEGIES, PERCEIVED SOCIAL SUPPORT IN MEDICAL STUDENTS

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Abstract

Medical students often face significant academic pressures and emotional challenges, which can make them vulnerable to psychological distress. This study examines the relationships between core self-evaluation (CSE), psychological distress, coping strategies, and perceived social support within this demographic. Core self-evaluation, which indicates an individual's self-worth and abilities, is expected to influence how students perceive and handle stress. A cross-sectional survey was administered to medical students using validated measures to assess CSE, psychological distress (including depression, anxiety, and stress), coping strategies (problem-focused, emotion-focused, and avoidance), and perceived social support. The findings revealed that a significant proportion of students experienced distress at higher frequencies than the general population, with junior students employed more problem-focused, emotion-focused, and avoidance coping strategies than final-year students. Socioeconomic status (SES) significantly correlates with distress, as lower SES students experience higher distress levels. Higher distress levels were associated with lower core self-evaluations (CSE) and perceived social support (PSS), as well as more use of avoidance coping strategies. Additionally, perceived support from family, friends, and significant others moderates the relationship between CSE and distress. The interaction between core self-evaluations (CSE) and perceived social support (PSS) significantly predicted psychological distress, with higher PSS enhancing the protective effects of CSE on distress, supporting the buffering hypothesis. These results highlight the prevalence of psychological distress and coping strategies used by medical students. Further underscores the importance of fostering positive core self-evaluations and strengthening social support systems to reduce psychological distress. Enhancing PSS through interventions that strengthen social support networks, while simultaneously fostering CSE by building self-efficacy and emotional stability, could be a promising approach to mitigating psychological distress in medical students. Future research should explore the long-term effects and specific coping intervention strategies tailored to the unique needs of medical students.

Keywords: Core Self-Evaluation, Psychological Distress, Coping Strategies, Perceived Social Support, Medical Students, Mental Health, Stress Management, Resilience

Background

Transitioning to medical college provides students with an extremely demanding environment which creates significant stress among students. Previous analyses identify three major sources of stressors in medical college: 1) Academic most common stressors, which include overwhelming lecture loads, frequent examinations, and anxiety over low scores (Edwards & Zimet, 1976; Brahmbhatt et al., 2013; Grover Jr & Tessier, 1978); 2) Financial Stressors (Hill, Goicochea, & Merlo, 2018); 3) Social and Personal Stressors, resulting from a lack of time for self, family, and friends due to the demands of intense academic schedules (Pereira et al., 2014). More recent studies in pakistan show that factors such as parental pressure, sleeplessness, and uncertainties regarding the future contribute to students' stress (Tahir et al., 2020).

Psychological distress is an umbrella term that encompasses a range of painful experiences leading to emotional suffering, usually manifesting as stress, anxiety, depression, and burnout (Zhu et al., 2022). A considerable amount of cross-cultural literature on coping and stress in medical students indicates an overall higher prevalence of psychological distress as compared to the same-age general population (Dyrbye et al., 2006; Imran et al., 2016). This deviation from normal distress levels not only affects academic performance (Stewart et al., 1999) but also leads to more dropouts (Sinval et al., 2024), decreased empathy (Thomas et al., 2007), and suicidal ideation among medical students (Sami et al., 2020). Eradicating these stressors is neither possible nor desirable (Adams, 2004), however, understanding the underlying factors to foster resilience in medical students is important(Dunn, Iglewicz, & Moutier, 2008).

An individual's vulnerability to psychological distress is influenced by modifiable psychosocial factors, including their environment and personality (Tosevski et al., 2010). AlNaim et al. (2016) discussed the significance of understanding the right mixture of personality traits, which is useful in dealing with distress for better academic outcomes. However, there are limited studies on how core self-evaluation is associated with psychological distress in medical students. Core self-evaluation (CSE) is defined by Judge et al. (1998) as a cognitive appraisal characterized as a subjective evaluation of one's effectiveness, perceived worth, and individual skills. CSE encompasses four personality dimensions locus of control, neuroticism, generalized self-efficacy, and self-esteem (Judge et al., 2003). The first three personality dimensions are linked with self-evaluation of personal capacity whereas the last dimension focuses on individuals'

judgment related to emotional functioning and self-control. Primarily, the impact of CSE has been empirically examined in organizational behavior research across different outcomes (Chang et al., 2012). Additionally, CSE has been associated with students' behaviors in higher education, including academic performance (Bipp et al., 2015), burnout (Lian et al., 2014), test anxiety (Chamorro-Premuzic et al., 2009), and overall life satisfaction (Jiang et al., 2014).

Numerous studies have shown an association between personality dimensions and coping strategies (Kammeyer-Mueller, Judge, & Scott, 2009; Parkes, 1986). Researchers found that adapted personality traits facilitate active coping mechanisms (Connor-Smith & Flaschbart, 2007). Conversely, individuals exhibiting maladaptive personality traits tend to experience higher levels of psychological distress, as they frequently rely on ineffective coping mechanisms (van Berkel, 2009). Coping strategies involve cognitive and behavioral efforts to decrease or adjust to maladaptive stressors and associated emotional distress (Holahan, Moos, & Groesz, 2007). Coping strategies are commonly categorized into two types—problem-focused and emotion-focused— and are commonly utilized coping styles. Problem-focused coping focuses on taking action to alter the stressor source while Emotion-focused deals with handling an individual's conflicting emotions in the hour of crisis (Lazarus & Folkman, 1984). Carver et al. (1998) proposed a model comprising 16 coping dimensions. Five focus on different elements of problem-focused coping, while another five relate to emotion-focused coping. The remaining six dimensions describe coping strategies that are generally considered less effective. A recent study in Peshawar revealed that undergraduate medical students primarily used maladaptive coping strategies. Interestingly students in public medical colleges exhibited better coping abilities than their peers in private institutions (Sarwar et al., 2019).

Introduced by Zimet et al. (1988) perceived social support is a multidimensional concept that involves the psychological or social support obtained from one's family, friends, and other significant persons by an individual. It should be noted that perceived social support is the perception of the individual that support would be available. Mostly social support–emotional and instrumental–is used as a coping mechanism against distress (Park et al., 2015). Studies have shown the range of social support students receive or perceive from family, friends and significant others plays a crucial role in helping students manage the challenges of medical college. Additionally, the availability of social support is linked to improved academic outcomes and a higher quality of life, and vice versa (Khulbe & Bartwal, 2024; wang et al., 2017). There is a notable area for further investigation regarding how the interaction of social support and personality traits influence psychological distress among medical students.

Considering the aforementioned points, this study aims to explore psychological distress, personality traits, coping, and social support among undergraduate medical students enrolled at a Medical College in Peshawar. More specifically we aim to investigate the following:

- The association of psychological distress, personality traits, coping, and perceived social support among medical students.
- whether there are significant differences in the study variables among students by years of their degree course (enrolment year); and
- How the interaction of variables predicts psychological distress among students.

Method

Participants

This study employed a cross-sectional design, collecting data from a survey questionnaire. We utilized a multilevel mixed methods sampling approach to target medical students aged 17 to 28. Initially, we contacted all medical colleges in Peshawar for data collection using convenience sampling. After explaining the study's nature, potential risks, benefits, and voluntary participation, we received permission from only three institutions to proceed.

In the next stage, we applied a probability proportionate stratified technique, dividing the populations of the participating colleges into two groups based on enrollment year (first and final year) and gender. Additionally, we accepted some voluntary online responses from medical students. Following data collection, we analyzed the data using the SPSS version… to meet the study's objectives and test its hypotheses.

Measures

The questionnaire contains four scales and few demographic questions. Developed by Judge and his colleagues, the CSES (Core Self Evaluations Scale) incorporates 12 items to evaluate core self-evaluations. It has 5 response options that include 'very inaccurate' and 'very accurate'. For example, a sample item reads: "I am confident I get the success I deserve in life." Internal consistency of this scale as measured with Cronbach's alpha ranges from 0.76 to 0.87 (Judge et al., 2003; Song et al., 2012).

Psychological distress was evaluated by Kessler's self-report Psychological Distress Scale, a 10-item questionnaire that measures the overall distress level during the preceding 30 days. Participants, for example, 'feeling chronically tired without a reason' rated how often they feel on a continuum between and none of the time and all of the time. This scale is more straightforward; the higher the score, the greater the psychological distress. For this sample. Cronbach's alpha was calculated to be 0.88 (Sampasa-Kanyinga, Zamorski, & Colman, 2018).

The COPE (Carver, 1997) Brief is used to measure any individual's coping mechanisms. This shortened version of the COPE inventory includes 14 subscales with two items each that assess different coping activities. The responses are given on a 1 to 4 scale, with 1 being "I haven't been doing this at all" and 4 being "I've been doing this a lot." Alphas were previously recorded at anywhere between 0.50 to 0.90 (Carver, 1997; Vungkhanching and Nguyen, 2012).

The Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet et al., 1988) is another self-report Instrument created to measure the perception of support from three sources family and friendship, as well as others. The higher the score, the more social support is perceived. "My family tries to help me" and "I can talk about my problems with friends" are both examples of potential items on the survey. There are 12 such statements which are scored on a scale of 1 to 7, where 1 means very strongly disagree and 7 means very strongly agree. The Cronbah Alpha for the scale has been found to vary from 0.79 to 0.95 (Akhtar et al., 2010).

Procedures

In terms of procedural aspects, participants were invited to complete the questionnaire manually, which required approximately 15 to 20 minutes. Participation was voluntary and anonymous. Prior to commencing the questionnaire, participants received information regarding the study's purpose and were assured that their responses would be kept confidential.

Results

"Descriptive and bivariate correlations of the study variables"

Table 1 represents demographic information related to participants. Out of 204 participants whose ages range from 17 to 28 a total of 107 students from 1st year and 97 students from the last year completed the questionnaire. The sample comprises 66 (32.4%) males compared to 138 (67.6%) female students with female students in the majority. Most of the students were from Khyber Medical College (KMC) 47.5% next to KMC we have participants from Khyber Girls Medical College 21.1% and Park International Medical College 21.1% and 10.4% of participants filled out our online service from other medical colleges of KPK. Nineteen students of upper socioeconomic status participated in the study. However, the majority of students living in the middle class (87.7) are compliant with the overall population of Pakistan. Only 3% of the students belong to the lower class. Additionally, 51% of students choose medicine as a career in order to complete their parent's wish. On the other hand, 39% say it is because of your own interest.

"Table 1 Demographic characteristics of the sample"

Variable	*N*	*%*
Age		
17	1	.5
18	22	10.8
19	45	22.1
20	36	17.6
21	10	4.9
22	17	8.3
23	34	16.7
24	25	12.3
25	11	5.4
26	2	1.0
28	1	.5
Gender		
Male	66	32.4
Female	138	67.6
Class		
1st year	107	52.5
Last year	97	47.5
Institute		
KGMC	43	21.1
KMC	97	47.5
PIMS	43	21.1
KMU	2	1.0
RMC	4	2.0
GMC	12	5.9
PMC	3	1.5
SES		
Upper	19	9.4
Middle	178	87.7
Lower	6	3.0
I choose Medicine as a field		
To fulfill my wish	80	39.2
To fulfill my parent' wish	109	51.0
Both	15	9.8

Note. N (no of cases), *%* (percentage), *SES* (socio-economic status)

Table 2 presents the bivariate correlation of our study variables. Pearson correlation among all variables indicates a significant bivariate correlation except CSE with brief COPE and its subs scale – emotion-focused. Further BRIEF COPE has not shown a relation with Perceived social support and its sub-scales. We can also see a lack of a significant relationship between certain support scale subtypes and Coping strategies.

Table 2 Interscale correlation between study variables

Variable	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
1 Distress	1									
2 CSE	-.291**	1								
3 Coping	.167*	.069	1							
4 PF-coping	-.087	.200**	.729**	1						
5 EF-coping	.138*	.061	.891**	.586**	1					
6 A-coping	.329**	-.131	.673**	.119	.446**	1				
7 PSS	-.443**	.289**	.109	.291**	.144*	-.193**	1			
8 Support-FA	-.364**	.235**	.112	.315**	.135	-.192	.821**	1		
9 Support-FR	-.309**	.216**	.092	.194**	.102	-.091	.756**	.423**	1	
10 Support SO	-.398**	.270**	.046	.193**	..106	-.208**	.853**	.591**	.479**	1

Note. CSE (core self-evaluation), *KPD* (psychological distress), *BC* (brief coping), *PSS* (perceived social support),*p < 0.05; **p < 0.01

"Comparison of students by year of study on primary variables"

Table 3 presents the findings from the independent t-test. We analyzed our study variables by comparing the first and last years of enrollment. The results reveal statistically significant differences in problem-focused, emotion-focused, and avoidance-focused coping strategies between the two classes.

Table 3 "Distribution of respondents by mean scores on the study variables by year of study"

variable	1st year Mean (S.D)	Last year Mean (S.D)	t value	P value
Avoid coping	2.17(0.65)	1.98(0.62)	2.08	.038*
Problem-focused	2.81(0.63)	2.47(0.65)	3.81	.000***
Emotion-focused	28.23(5.29)	26.39(6.12)	2.29	.023*
Significant other	14.57(5.55)	15.13(6.49)	-.656	.512
Family	16.98(4.96)	16.20(5.56)	1.04	.296
Friends	15.05(4.94)	14.32(5.60)	.983	.327

CSE	38.92(6.82)	39.73(5.20)	-.942	.347
KPDS	24.47(7.77)	23.74(8.94)	.627	.531

Note. S.D (standard deviation)

Chi-square analysis examining the relationship between demographic variables and psychological distress.

Table 4 shows the Chi-square test results on the association between sociodemographic factors and psychological distress. The table categorizes the participants into four levels of distress: well, mild distress, moderate distress, and severe distress, while also providing p-values to indicate the significance of these associations. The findings show Psychological distress was significantly higher among respondents with lower socioeconomic status ($P < .05$). Other factors such as age, class, gender, and the intrinsic choice of medicine do not show significant associations with distress levels. However, a trend suggests differences in distress levels between first-year and last-year students.

"Table 4 *Association of psychological distress based on Kessler PD scale with sociodemographic characteristics"*

Variable	Well		Mild distress		Moderate distress		Severe distress		p-value
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*	
Age group									.538
17-20	30	28.8	30	28.8	21	20.2	23	22.1	
21-24	33	38.4	19	22.1	10	11.6	24	27.9	
25-28	5	35.7	4	28.6	2	21.4	3	21.4	
Class									.059
1st year	30	28.0	31	29.0	23	21.5	23	21.5	
Last year	38	39.2	22	22.7	10	10.3	27	27.8	
Gender									.838
Male	24	36.4	18	27.3	9	13.6	15	22.7	
Female	44	31.9	35	25.4	24	17.4	35	25.4	
SES									.009**
Upper	6	31.6	4	21.1	1	5.3	8	42.1	
Middle	60	33.7	49	27.5	32	18.0	37	20.8	
Lower	1	16.7	0	0.0	0	0.0	5	83.3	
ICM									.386
My wish	20	25.0	23	28.7	12	15.0	25	31.3	
Parents wish	43	39.4	27	24.8	18	16.5	21	19.3	
Both	5	33.3	3	20.0	3	20.0	4	26.7	

Note. N (no of cases), *%* (percentage), *ICM* (I choose medicine), *SES* (socio-economic status)

Hierarchical Regression Analyses

"The analysis purposed at to explore the predictive significance of social support and core self-evaluations (CSE), as well as the potential moderating effect of CSE on the relationship between social support and the variance in the three subscales of the Depression, Anxiety, and Stress Scale (DASS)". To achieve this, multiple hierarchical regression analyses were performed. Initially, gender and age were included as covariates in the regression models. In the subsequent step, CSE scores were incorporated, followed by perceived social support (PSS) in the third step. "To evaluate the moderating influence of CSE on social support, an interaction term was introduced in the final step of the regression model, in accordance with the methodology established by Aiken and West in 1991". Continuous predictors were centered to address potential multicollinearity issues. The results demonstrated a significant interaction between social support and CSE, which contributed a small yet notable additional variance in stress ($\Delta R^2 = .01$, $f^2 = .01$), beyond the variance explained by the "demographic variables, social support, and CSE alone".

"Table 5 Hierarchical regression analyses show the variance in psychological distress accounted for by CSE and PSS interactions"

	R^2	F	β	ΔR^2
Psychological Distress				
Step 1	.00	.57		.00
Gender Age			.01 .07	
Step 2	.06	6.9		.09
CSE			-.30**	
Step 3	.24	16.0		.15
Social Support			-.41**	
Step 4	.26	13.8		.01
Social support × CSE			.14*	

Note. CSE (core self-evaluation), *KPD* (psychological distress), *PSS* (perceived social support),*p < 0.05; **p < 0.01

Discussion

This study investigated the roles of core self-evaluation (CSE), perceived social support (PSS), and coping strategies in forecasting distress levels among undergraduate medical students, contrasting findings between first-year and final-year cohorts. The sample comprised 204 medical students, primarily aged 18-23, with the most significant group being 19 years old. The gender distribution favored females over

males, and first-year and final-year students were nearly equally represented. Notably, 51% of these medical students chose their field primarily to satisfy parental expectations, underscoring the profound impact of familial and cultural norms on their career decisions which aligned with a previous study in Pakistan (Soomro et al., 2022). The findings are consistent with previous research indicating that a significant proportion of students reported experiencing distress at notably high frequencies compared to the general population (Imran, Tariq, Pervez, & et al., 2016; Khalid et al., 2022). Similar to earlier studies involving undergraduate medical students, this research noted that junior students scored slightly higher on psychological distress metrics than their senior counterparts (refer to Table 3).

Additionally, comparisons of coping strategies by year of study revealed that junior students employed problem-focused, emotion-focused, and avoidance coping techniques more significantly than their final-year peers. This difference may stem from the fact that junior students are still acclimating to the academic and social pressures of college life, which could contribute to heightened stress levels. However, the data suggests a borderline non-significant trend indicating that final-year students might experience greater distress than first-year students (see Table 5). Most participants hailed from middle-class backgrounds (87.7%), with fewer representing upper-class (9.4%) and lower-class (3.0%) demographics. The chi-square analysis demonstrated a notable association between socioeconomic status (SES) and distress levels, indicating that students from lower SES backgrounds experience heightened levels of distress, consistent with findings from Jaber et al. (2024).

Table 2 indicates that elevated distress levels correlate with lower CSE and PSS, along with increased reliance on avoidance coping strategies. This supports our hypothesis regarding the relationships between CSE and the other examined variables. Specifically, CSE shows a positive correlation with PSS and problem-focused coping, whereas avoidance coping is positively associated with distress and negatively associated with social support. Emotion-focused coping demonstrates a strong relationship with overall coping strategies but does not directly correlate with CSE.

To understand the research question regarding the interaction of variables that predict psychological distress, we empirically examined the effects of interactions between CSE and social support (PSS) on psychological distress among undergraduate students. The findings support our expectations in establishing relationships between PSS, CSE, and psychological distress. Consistent with prior research, CSE and PSS were found to be significantly and negatively correlated with psychological distress, such that individuals with higher levels of CSE or greater PSS reported lower levels of stress (Yudes et al., 2024).

Beyond the unique contributions of CSE and PSS as independent predictors, our study also examined whether PSS moderates the relationship between CSE and stress, explaining a statistically significant portion of the variance in psychological distress. Supporting an integrative prediction model of psychological distress, the findings revealed that CSE accounted for a small but significant proportion of variance in stress ($\Delta R^2 = .06$). In contrast, PSS accounted for a medium and significant portion of variance ($\Delta R^2 = .24$). Importantly, even after accounting for the main effects of demographic variables, PSS significantly moderated the relationship between CSE and stress ($\Delta R^2 = .01$), indicating that the protective effects of CSE on stress are enhanced in the presence of high PSS.

Extending previous research, our findings provide evidence of the joint contribution of both PSS and CSE in predicting psychological distress (KPD). Specifically, the interaction between PSS and CSE explained an additional small but significant portion of the variance in psychological distress ($\Delta R^2 = .01$; $\beta = .14$; $p < 0.05$), beyond the main effects of CSE and PSS. Consistent with the interaction hypothesis, the CSE × PSS interaction contributed significantly to the prediction of psychological distress, even after accounting for socio-demographic variables.

These results suggest that the protective effect of CSE on psychological distress is moderated by PSS, such that the magnitude of the negative association between CSE and psychological distress is stronger among individuals with higher PSS. This finding supports the buffering hypothesis, which posits that individuals with higher PSS are more adept at leveraging their positive self-appraisals (i.e., CSE) to reduce distress. Their enhanced social support systems likely help them to utilize their strong self-evaluations to cope more effectively, amplifying the stress-buffering effects of CSE.

These findings underscore the importance of addressing both internal psychological factors (i.e., CSE) (Judge & Bono, 2001). and external social resources (i.e., PSS) (Cohen & Wills, 1985) in reducing distress. Enhancing PSS through interventions that strengthen social support networks, while simultaneously fostering CSE by building self-efficacy and emotional stability, could be a promising approach to mitigating psychological distress in medical students.

Limitations

The findings of this study offer valuable insights, but it is important to acknowledge several limitations that could impact the results. The sample consisted exclusively of undergraduate students from a specific urban region, which limits the generalizability of the student characteristics to broader contexts across Pakistan. Junior-year students exhibited higher psychological distress, despite relying more on problem-focused, emotion-focused, and avoidance coping strategies than senior students. This observation highlights the need for further exploration to better understand the

underlying factors contributing to this trend and its potential impact on their well-being. Additionally, the research does not clarify whether the tendency towards avoidant coping strategies was an existing trait or if it developed as a result of increasing psychological distress during the study period. Although the research emphasizes the individual and interactive influences of Core Self-Evaluation (CSE) and Perceived Social Support (PSS) on psychological distress, certain limitations warrant consideration. The positive moderating effect of social support on the relationship between CSE and distress may encompass nuances that are not fully captured in our model. Future research should investigate this interaction in greater depth, possibly differentiating between various types and sources of social support, such as familial versus peer support, and their specific impacts on the CSE-distress relationship. Moreover, longitudinal studies could deepen our understanding of the temporal dynamics among these variables, providing more compelling evidence regarding their interconnected roles in mental health outcomes for medical students.

Conclusion

The data collected in this study reveals that junior-year medical students reported slightly higher average levels of psychological distress compared to their senior-year counterparts. This suggests that students in the earlier years of their medical education may be more susceptible to mental health challenges. Whereas, while analyzing the severity of distress across different academic years, the results show final year students showed a borderline non-significant trend. This implies that although the data does not statistically confirm a strong difference, there is an observable pattern indicating that final-year students might experience more intense psychological distress than first-year students. This trend could be attributed to the increased academic and clinical responsibilities faced by senior students as they approach graduation and prepare to transition into professional medical roles.

The significant relationships observed between core self-evaluation (CSE), perceived social support (PSS), and psychological distress emphasize the dual importance of fostering internal resilience and external social resources among medical students. Students with higher levels of CSE, supported by strong social networks, reported lower levels of distress, supporting the buffering hypothesis. Interventions aimed at enhancing students' self-efficacy, emotional stability, and ability to effectively leverage social support could play a pivotal role in mitigating distress.

Medical institutions and educators have a critical role in equipping students not only with clinical and academic competencies but also with the psychological tools needed to sustain their well-being in a demanding profession. These findings advocate for a holistic approach to medical education, one that integrates psychological support systems, builds individual resilience, and fosters a culture of care within medical

schools. By addressing both internal and external factors influencing distress, we can better support medical students as they prepare for their vital roles as future healthcare providers.

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