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Strengthening coping among psychiatry residents: A theory of planned behavior-based mental health promotion model

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Abstract

Psychiatry residency is a high-stress period characterized by significant psychological strain, often exacerbated by limited use of effective coping strategies, which impacts resident well-being and patient care. This study examined the relationship between psychopathological symptoms and coping mechanisms among psychiatry residents, identified influencing factors, and developed a Theory of Planned Behavior (TPB)-based mental health intervention. A sequential exploratory mixed-methods design was employed. Seventy-three residents completed the Symptom Checklist-90 (SCL-90) and the Brief COPE Inventory. Statistical analyses explored associations and predictors. A TPB-based intervention module was developed and evaluated through qualitative interviews with 11 residents and 3 academic supervisors. High levels of depression, somatization, and anxiety were observed. Residents utilized both adaptive (e.g., acceptance) and maladaptive (e.g., venting, self-blame) coping strategies. Psychopathology was strongly correlated with coping style ($r = 0.957$, $p < 0.001$). Financial burden ($p = 0.008$) and lack of intrinsic motivation ($p = 0.009$) were significant predictors. The TPB module demonstrated strong content validity ($\kappa > 0.75$). Psychopathological symptoms are linked to maladaptive coping and influenced by external stressors. TPB-based interventions show potential in improving coping mechanisms and reducing psychological symptoms. TPB-guided modules may enhance coping strategies and can be integrated into psychiatric training.

Keywords: Coping mechanism, Medical education, Mental health promotion, Psychiatry residents, Theory of planned behavior.

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1. Introduction

Postgraduate medical education, particularly in psychiatry, represents a demanding professional training phase that involves intense cognitive, affective, and behavioral challenges. Medical residents frequently experience psychosocial stress that adversely impacts their mental health, contributing to underrecognized problems such as depression, anxiety, and burnout [1, 2]. These conditions, in turn, diminish the quality of life and professional performance.

Psychiatry residents face additional burdens due to repeated exposure to complex and emotionally taxing clinical situations, such as managing patients with suicidal ideation, aggressive behaviors, or severe trauma, which can lead to emotional exhaustion, vicarious traumatization, and compassion fatigue [3, 4]. Studies show that 31–69% of residents encounter patient suicide, and 25–64% experience physical assaults, highlighting the severity of occupational stressors [5]. In Indonesia, up to 31.4% of residents report emotional exhaustion [6]. Factors such as stigma, limited support, inadequate crisis training, and financial pressure further exacerbate psychological distress [7].

This study addresses the following research questions: 1) What is the relationship between psychopathological symptoms and coping strategies among psychiatry residents? 2) What intrinsic and extrinsic factors contribute to psychopathological risk? 3) How can a TPB-based intervention improve coping behavior and reduce psychological distress?

To answer these questions, the study employed a sequential exploratory mixed-methods design. Quantitative assessments (SCL-90 and Brief COPE) were used to evaluate psychopathology and coping patterns among psychiatry residents. Subsequently, qualitative interviews and a participatory workshop were conducted to explore underlying factors and co-develop a TPB-based mental health promotion module. The intervention was validated and evaluated through expert review and participant feedback.

2. Literature Review

Coping strategies, defined as cognitive and behavioral efforts to manage demands that exceed an individual's resources [8] play a crucial role in mitigating psychological distress. These strategies are typically classified as problem-focused, emotion-focused, and avoidant coping. While adaptive coping mechanisms such as acceptance, planning, and seeking support are associated with better mental health outcomes, many residents continue to rely on maladaptive strategies like avoidance, denial, or venting, which are linked to increased psychopathological symptoms [9, 10].

To improve adaptive coping in a structured manner, theory-driven interventions are essential. The Theory of Planned Behavior (TPB), introduced by Ajzen, is one of the most widely used frameworks for modifying health-related behaviors. It posits that behavioral intentions are determined by attitudes, subjective norms, and perceived behavioral control [11]. TPB has been applied in mental health contexts, including psychological help-seeking behavior [12] and in designing health education interventions [13].

TPB-based interventions are effective in enhancing intention and behavior by shifting beliefs about the value of adaptive coping, reinforcing supportive norms, and building self-efficacy. A meta-analysis by Armitage and Conner [14] reviewing 185 studies showed TPB explains up to 39% of variance in behavioral intention and 27% in actual behavior [14]. These findings highlight the framework's applicability in developing tailored, context-sensitive mental health interventions for high-stress groups such as psychiatry residents.

3. Material and Methods

3.1. Study Design

This study employed a sequential exploratory mixed-methods design, integrating both quantitative and qualitative approaches to comprehensively examine the relationship between psychopathological symptoms and coping mechanisms, identify influencing factors, and develop a Theory of Planned Behavior (TPB)-based mental health promotion model. The quantitative phase involved a cross-sectional observational design, while the qualitative phase used an instrumental case study to provide in-depth contextual understanding of the intervention's implementation and perceived effectiveness.

This mixed-methods framework was selected to bridge the gap between numerical patterns and lived experiences—a limitation of prior studies that typically relied on either quantitative correlations or post-intervention surveys without

integrating resident narratives or participatory module design. By combining approaches, this study enhances the validity and applicability of its findings in real-world residency settings.

3.2. Participants

The study was conducted at the Psychiatry Residency Program, Faculty of Medicine, Universitas Sebelas Maret, Surakarta, Indonesia. In the quantitative phase, total population sampling was applied, involving all eligible psychiatry residents across various training levels. For the qualitative phase, purposive sampling was used to select participants representing diverse backgrounds and residency levels, and prior exposure to mental health interventions, including 11 residents and 3 academic supervisors. This approach ensured variation in perspectives and enriched the intervention design and evaluation process. Inclusion criteria ensured participants were actively enrolled and consented to participate in both data collection and module feedback.

3.3. Data Collection

Quantitative data were collected through an online survey comprising a demographic questionnaire, the Symptom Checklist-90 (SCL-90) to measure psychopathological symptoms across multiple domains, and the Brief COPE Inventory to assess coping strategies across adaptive and maladaptive dimensions.

Following the quantitative phase, the qualitative component included in-depth semi-structured interviews conducted to explore residents' coping experiences, mental health challenges, and feedback on the intervention. Interviews were audio-recorded, transcribed verbatim, and anonymized. Additionally, a participatory workshop was held to co-develop the TPB-based intervention, incorporating both resident and supervisor feedback to ensure contextual relevance and feasibility.

3.4. Data Analysis

Quantitative data were analyzed using IBM SPSS Statistics version 25. Descriptive statistics summarized demographic variables and scale scores. Normality testing (Shapiro–Wilk) guided the selection of parametric or non-parametric procedures. Bivariate analyses included Pearson correlation for continuous variables and chi-square tests for categorical variables, used to identify associations between psychopathology and coping strategies. Multivariate logistic regression identified independent predictors of psychopathological symptoms, adjusting for potential confounding variables. Additionally, path analysis explored potential mediating effects of psychopathology on the relationship between extrinsic factors and coping behavior. This advanced modeling was justified by the need to understand indirect pathways relevant to behavioral intervention design.

Qualitative data were analyzed using thematic analysis on case studies, following the Braun and Clarke six-phase approach: familiarization, coding, theme development, review, definition, and reporting. An inductive-deductive strategy was employed: inductive to allow emergent themes grounded in the data, and deductive to align with TPB constructs (attitude, subjective norms, and perceived behavioral control). Investigator triangulation and member checking were used to enhance the trustworthiness of findings.

3.5. Intervention Module Development and Validation

Based on the combined findings, a six-session TPB-based mental health promotion module was designed to target the three core components of the theory: 1. Attitude (e.g., psychoeducation and cognitive restructuring), 2. Subjective norms (e.g., peer and supervisor dialogue), 3. Perceived behavioral control (e.g., self-regulation and guided imagery). Module development followed a participatory and iterative approach, incorporating evidence-based strategies and feedback from workshops. Content validity was assessed by a panel of five experts in psychiatry and medical education using a content validity index (CVI) and kappa agreement coefficient, with values above 0.75 considered excellent. The final module was piloted and refined based on participant feedback, ensuring contextual appropriateness and practicality for integration into psychiatry training curricula.

4. Results

4.1. Quantitative Findings

4.1.1. Participants' Characteristics

A total of 73 psychiatry residents participated in the quantitative study, comprising 35.6% males and 64.4% females, with a balanced distribution across junior, mid-level, senior, and chief residency stages. Most participants were over 30 years old, self-financed their education, and reported intrinsic motivation for pursuing psychiatry (Table 1).

Table 1.
Participant Characteristics.

Variable		n	%
Gender	Male	26	35.6%
	Female	47	64.4%
Age	<30 years	16	21.9%
	>30 years	57	78.1%
Educational Backgrounds	Bachelor's Degree	68	93.2%
	Master's Degree	5	6.8%
Place of Origin	Out of Province	44	60.3%
	In Province	29	39.7%
Living Arrangement	Own residence	9	12.3%
	Rented accommodation	43	58.9%
	With spouse/children	9	12.3%
	With parents	12	16.4%
Marital Status	Married	52	71.2%
	Single	12	16.4%
	Divorced	2	2.7%
	Complicated relationship	2	2.7%
	In a relationship	5	6.8%
Parental Status	No Children	27	37.0%
	With Children	46	63.0%
Residency Level	Junior	21	28.8%
	Intermediate	23	31.5%
	Senior	12	16.4%
	Chief Resident	17	23.3%
Funding Source	Fully self-funded	8	11.0%
	Partially self-funded	18	24.7%
	Fully funded (Scholarship/parents/spouse)	47	64.4%
Career Motivation	Not self-determined	5	6.8%
	Self-determined	68	93.2%

4.2. Levels of Psychopathology and Coping Mechanisms

Analysis of psychopathological symptoms using SCL-90 revealed that the most prominent dimensions were somatization (mean = 1.86), depression (mean = 1.82), and anxiety (mean = 1.75). Assessment of coping mechanisms using the Brief COPE indicated that the most frequently employed adaptive strategies were acceptance and positive reframing, while the dominant maladaptive strategies were venting and self-blame (Table 2).

Table 2.
Coping Mechanism Scores (Brief COPE Scale) and Psychopathology (SCL-90) with Normality Test Results.

Variable	Mean	SD	p-value
Coping Style Scales			
Problem-focused coping	22.00	4.32	0.015
Emotion-focused coping	25.22	6.00	0.056*
Avoidant coping	19.99	3.67	0.012
Total Coping Style Score	67.21	7.79	0.000
Adaptive Coping Strategies			
Informational support	5.53	1.56	0.000
Positive reframing	5.68	1.36	0.000
Acceptance	4.21	1.74	0.000
Religion	4.15	1.75	0.000
Humor	4.01	1.73	0.000
Active coping	5.36	1.41	0.000
Planning	5.42	1.71	0.001
Emotional support	4.66	1.76	0.001
Total Adaptive Coping	39.03	6.31	0.003
Maladaptive Coping Strategies			
Venting	4.26	1.71	0.000
Denial	5.37	1.56	0.005

Substance use	4.64	1.58	0.005
Behavioral disengagement	4.96	1.71	0.001
Self-distraction	4.96	1.56	0.008
Self-blame	3.93	1.77	0.000
Total Maladaptive Coping	28.12	4.09	0.490*
Psychopathology (SCL-90)			
Somatization	3.38	4.89	0.000
Obsessive-compulsive	2.44	3.80	0.000
Interpersonal sensitivity	2.75	4.04	0.000
Depression	3.67	5.16	0.000
Anxiety	3.18	4.03	0.000
Anger-hostility	1.67	2.66	0.000
Phobic anxiety	1.84	2.93	0.000
Paranoid ideation	1.82	2.51	0.000
Psychoticism	1.07	2.39	0.000
Additional Items	0.00	0.00	n/s
Total Score	21.82	30.27	0.000

4.3. Correlation between Psychopathology and Coping Mechanisms

Pearson correlation analysis revealed a very strong and significant association between overall psychopathology levels and total coping strategy use ($r = 0.957$, $p < 0.001$). Bivariate analysis showed that psychopathology symptoms were positively correlated with maladaptive coping strategies ($p < 0.001$) and negatively correlated with adaptive coping strategies ($p < 0.001$) (Table 3).

Table 3.
Bivariate Correlation Analysis Between Coping Styles and Psychopathology.

Variable	**Psychopathology**		
	n	**r**	**p-value**
Coping Style Scale	73	0.957	<0.001*
Adaptive Coping Strategies	73	0.715	<0.001*
Maladaptive Coping Strategies	73	0.466	<0.001*

4.4. Factors Influencing Psychopathology

There are no intrinsic variable factors associated with increased psychopathology risk. Two extrinsic variables were significantly associated with increased psychopathology risk: educational funding source ($p = 0.008$) and career motivation ($p = 0.009$). Multivariate analysis identified both as independent predictors of total psychopathology scores. However, path analysis revealed that only career motivation ($r = 0.289$, $p = 0.009$) had an indirect influence on coping via psychopathology ($r = 0.587$, $p < 0.001$). The direct effects of funding ($r = -0.026$, $p = 0.789$) and career motivation ($r = 0.107$, $p = 0.282$) on coping were not statistically significant (Table 4).

Table 4.
Multivariate Analysis of Variables Associated with Psychopathology.

Variable	**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**p-value**
	B	**Std. Error**	**Beta (r)**		
(Constant)	79.27	3.72	–	–	–
Funding Source	-2.34	1.26	-0.207	-1.86	0.067
Career Motivation	-9.10	3.41	-0.297	-2.67	0.009*

4.5. Intervention Module Development and Validation

Based on the quantitative findings, a workshop involving residents and academic supervisors was conducted to co-develop a TPB-based mental health promotion module. The module comprises six sessions focusing on psychoeducation, self-reflection, discussion of social norms, guided imagery, and behavioral control reinforcement targeting TPB's three core components: attitude, subjective norms, and perceived behavioral control. Expert panel validation through face and content validity tests yielded a kappa coefficient > 0.75, indicating excellent agreement and strong content relevance.

4.6. Qualitative Findings and Module Evaluation

4.6.1. In-depth Interview Results

Interviews with 11 residents and 3 academic supervisors identified five key themes: 1) perceptions of psychological distress during residency, 2) factors contributing to psychopathology, 3) efforts and challenges in employing adaptive

coping strategies, 4) perceptions of the role of the TPB module. All three components of the TPB attitude, subjective norms, and perceived behavioral control were consistently recognized as influencing residents' intentions to utilize adaptive coping mechanisms.

Table 5.
Theme Identification and Participants' Excerpts.

Identified Theme	Participants' Excerpts
Perceptions of Psychological Distress During Residency (Perceptions of psychological distress during residency as expressed by both residents and academic supervisors, encompassing emotional, cognitive, and physical difficulties that affect clinical and academic performance).	Residents' Excerpts *"…When I can no longer hold in my emotions, I feel anxious and uncontrollably angry, and I might throw things nearby. After doing that, I feel relieved and often end up sobbing…" (R4)*
	Academic Supervisor' Excerpts *"...I've noticed some residents becoming more withdrawn, sometimes isolating themselves. Even during case discussions or scientific meetings, they seem uninterested...." (PA2)*
Factors contributing to psychopathology (Contributing Factors to the Development of Psychopathological Symptoms in Residents, Both Intrinsic and Extrinsic)	Residents' Excerpts *"…Well, as we grow older, new experiences also come along, including pressures from within and outside ourselves. These things disturb my mental health…." (R8)* *"I tried to accept doing things that aren't really my choice, but under intense pressure, I end up feeling angry and exhausted. I often question why I have to go through this." (R7)*
	Academic Supervisor' Excerpts *"…Some residents told me they are financially limited, especially those who have families. Besides their academic duties, they also worry about bills and their children's tuition. That's a major stressor affecting their focus and mental state..." (PA1)*
Efforts and challenges in using adaptive coping strategies (Efforts and challenges in dealing with stress experienced during residency, reflecting the coping mechanisms used by the resident)	Residents' Excerpts *"…Rather than lashing out at others, I prefer to distance myself. I stay alone in my room and turn off my phone. Especially on weekends, being alone helps me calm down and think more clearly…." (R8)* *"…Hmmm, when I feel overwhelmed, sometimes I call my mom late at night just to talk. She might not understand the world of residency, and I don't expect solutions, but just hearing her voice and prayers makes me feel better…." (R1)*
	Academic Supervisor' Excerpts *".....Younger residents tend to be less emotionally mature and more reactive under pressure. Older residents are usually more stable, but they carry heavier life burdens…." (PA3)*
Perceptions of the role of the TPB module (Perceptions of residents and academic staff regarding the role of the Theory of Planned Behavior (TPB) module in helping residents manage psychological distress and reduce the risk of psychopathological symptoms during residency)	Residents' Excerpts *"...I just realized that I always avoid or shut down during stress. After going through several sessions with the module, I started recognizing that pattern and trying healthier ways, like journaling or talking with close friends...." (R6)* *"…This module helped me understand that how I perceive stress really affects how I deal with it. Now I'm learning not to panic or damage things when stress hits..." (R7)*
	Academic Supervisor' Excerpts *"Other staff and I think this module helps residents become more aware of their coping strategies. Sometimes they don't even realize their strategies are maladaptive, and the module helps them improve that." (PA1)*

4.7. Implementation Evaluation

Participants reported that the module increased their awareness of adaptive coping, broadened their perspective on stress, and promoted the use of healthier coping behaviors. Some residents noted a reduction in mild psychopathological symptoms following the sessions. Academic supervisors acknowledged that the module created a reflective space, strengthened self-awareness, and encouraged positive changes in coping behavior. Overall, the intervention was perceived as relevant, effective, and practical for psychiatry residency training.

5. Discussion

This study integrated quantitative and qualitative data from psychiatry residents to investigate the relationship between coping mechanisms and psychological distress, while also designing and evaluating a mental health promotion intervention based on the Theory of Planned Behavior (TPB). By employing a mixed-methods approach, the study aimed not only to identify the prevalence and nature of psychopathological symptoms but also to understand the contextual, cognitive, and emotional factors influencing coping behaviors in a high-pressure training environment. Approximately 28.8% of residents reported clinically significant psychopathological symptoms, particularly in the domains of depression, somatization, and anxiety, findings that are concerning given the critical clinical responsibilities carried by residents and the potential impact on both patient care and personal functioning. These rates align with global estimates, with prior studies by Steil, et al. [15] and Alawad, et al. [16] reporting prevalence rates of depression among medical residents between 28% and 65% [15, 16] underscoring the widespread nature of mental health concerns in postgraduate medical education, the consistent presence of such high prevalence rates across diverse training stages suggests that structural factors inherent to medical education such as long working hours, academic pressure, emotional exposure, and limited institutional support may contribute significantly to the psychological burden experienced by residents, beyond individual vulnerability alone.

Qualitative findings enriched this numerical portrait by revealing how psychological symptoms manifested behaviorally, emotionally, and cognitively. Residents described internal experiences such as persistent negative thoughts, concentration difficulties, emotional lability, and physical exhaustion, often accompanied by social withdrawal and diminished professional engagement. These patterns reflect the chronic psychological burden and cumulative stress inherent in residency training. They also point to the need for interventions that move beyond symptom management to address coping beliefs, behavioral flexibility, and systemic factors that shape stress responses [17]. In response to these stressors, residents employed a mix of adaptive and maladaptive coping strategies. Adaptive mechanisms included positive reframing, seeking emotional support, and problem-focused efforts, while maladaptive responses ranged from denial and venting to behavioral disengagement. The co-occurrence of both coping styles within the same individuals highlights the situational and fluctuating nature of coping, dependent on stress intensity, perceived efficacy, and environmental feedback. This complexity mirrors findings by Alosaimi, et al. [18] and Akim, et al. [19] who observed similar situational variability in medical professionals' coping responses under pressure [18, 19].

The observed coping-psychopathology relationship aligns with transactional models of stress, particularly Lazarus and Folkman's framework, which conceptualizes coping as a dynamic process shaped by individual appraisals of threat and perceived control [9]. According to this model, maladaptive coping emerges when perceived demands exceed available internal or external resources. This theoretical perspective underpins the rationale for using TPB in the present study to enhance behavioral control and shift maladaptive beliefs by addressing the psychological determinants of coping [20]. Furthermore, the bidirectional nature of the relationship between coping and psychopathology is well-established in psychiatric literature. Coping is not a static trait but a modifiable set of strategies that evolve based on past outcomes, current context, and cognitive schemas [21, 22]. When ineffective or poorly matched to the stressor, even well-intentioned coping attempts can exacerbate distress. Qualitative narratives in this study affirmed this dynamic, with residents reporting a tendency to initially employ adaptive strategies but reverting to avoidant behaviors under emotional overload or systemic pressures. When coping strategies are ineffective, misapplied, or unavailable, residents are at greater risk of developing psychopathological symptoms, which often manifest as emotional, cognitive, or behavioral dysfunction [23]. This highlights the importance of targeting self-regulation capacity as a protective mechanism.

Quantitative analysis revealed a strong, statistically significant correlation between psychopathology and overall coping behavior ($r = 0.957$, $p < 0.001$). Importantly, higher distress levels were associated not only with maladaptive strategies but also with increased use of adaptive coping. Qualitative narratives support this interpretation, with residents describing emotional dysregulation during acute stress leading to impulsive behaviors such as acting aggressively or engaging in avoidant behaviors like isolating themselves. This finding may seem paradoxical, but it aligns with literature suggesting that under intense psychological strain, individuals may attempt multiple strategies, including ineffective ones, in a compensatory effort to restore emotional balance. This reflects findings from previous research indicating that stress intensity can override rational strategy selection, especially when emotional regulation is impaired [24]. From a TPB perspective, such responses reflect compromised perceived behavioral control, a core construct in the model. Even when residents hold positive attitudes toward adaptive coping and acknowledge social expectations to manage stress effectively, their sense of agency in doing so may be undermined by emotional overwhelm or environmental constraints [11]. This supports TPB's assertion that behavioral intentions are not sufficient without the confidence and capacity to execute them and underscores the importance of strengthening behavioral control through targeted interventions.

Cultural and institutional norms further shape residents' coping choices. In hierarchical training systems such as those found in Indonesia, norms of stoicism, deference to authority, and avoidance of vulnerability can discourage emotional expression or professional help-seeking. Residents in this study often relied on informal support (e.g., family, peers) or isolated themselves when under pressure. Such behaviors may reflect not only internalized stigma but also structural gaps

in institutional mental health support. These contextual barriers must be acknowledged when designing and implementing behavioral interventions [25]. Beyond coping behavior, this study also identified extrinsic factors associated with psychological vulnerability. Self-funded education and lack of intrinsic career motivation were significantly associated with higher psychopathology levels. The psychological burden of educational debt and uncertain vocational alignment likely contribute to chronic stress and existential fatigue. Although intrinsic factors like age and gender were not statistically significant predictors, qualitative data suggested that older residents or those with caregiving duties experienced additional psychosocial strain. These findings emphasize the need to triangulate quantitative outcomes with qualitative narratives to uncover hidden vulnerabilities and subgroup-specific risks.

This study's findings are consistent with a growing body of literature emphasizing the role of individual psychological resources such as emotional intelligence, sleep hygiene, and resilience as critical moderators in the stress-coping psychopathology nexus among medical populations. Emotional intelligence, particularly the capacity to recognize and regulate one's emotional responses, has been associated with both reduced perceived stress and increased use of adaptive coping strategies among healthcare workers. Similarly, adequate and consistent sleep has been shown to enhance executive functioning and emotional regulation, both of which are necessary for effective coping in high-stress environments such as medical residency. Resilience, defined as the ability to recover from adversity, has also been linked to a lower incidence of burnout and better psychological adaptation in demanding training contexts [26-28]. Notably, the path analysis in this study identified career motivation as an influential factor affecting coping behavior indirectly through its impact on psychopathological symptoms. This mediating pathway suggests that residents with a strong sense of intrinsic motivation may experience greater psychological stability, which in turn supports the selection and enactment of more adaptive coping responses. In contrast, residents who enter training with ambivalence or primarily extrinsic drivers (e.g., financial incentives or parental expectations) may be more psychologically vulnerable, particularly when facing emotionally taxing clinical duties.

Interestingly, while the financial burden was significantly associated with distress in bivariate analysis, it did not demonstrate a direct or indirect effect on coping behavior in the multivariate model. This may indicate that financial strain alone does not predict maladaptive coping unless compounded by other psychosocial stressors, such as low perceived support, poor institutional culture, or lack of autonomy. Alternatively, financial hardship may contribute to a background level of chronic stress that undermines coping capacity more subtly over time, without presenting as a discrete causal factor in acute coping decisions. This finding suggests the need for further research exploring the interaction between financial concerns and other ecological variables, including workload demands, institutional support systems, and personal meaning derived from clinical work. It also reinforces the importance of a multidimensional approach to resident well-being that considers both personal and systemic influences on stress, coping, and mental health outcomes.

The TPB-based mental health promotion module developed in this study demonstrated promising outcomes. It effectively targeted the three theoretical components of TPB: attitudes, subjective norms, and perceived behavioral control. Psychoeducational components challenged distorted beliefs about stress and normalized adaptive responses. Group-based sessions fostered collective reflection, peer validation, and supervisor engagement, thereby reinforcing social norms supportive of psychological openness. Practical exercises (e.g., goal setting, self-monitoring, guided imagery) enhanced confidence in managing stress, improving both self-efficacy and emotion regulation capacity. These results are consistent with studies by Adams, et al. [29] and Li, et al. [30] who applied TPB-based behavioral interventions to promote mental health behavior in educational and community samples [29, 30]. They also align with Bohon's application of Ajzen's framework, which demonstrated that improving perceived control and attitudes significantly increased intention to seek psychological care [11, 12]. In this study, the attitude component was strengthened through psychoeducational sessions that helped residents reframe stress as manageable and coping strategies as modifiable. Subjective norms were addressed through group discussions and supervisor feedback, which served to normalize help-seeking behaviors and emotional disclosure. Perceived behavioral control was enhanced via self-regulation training, guided imagery, and structured goal-setting activities. This integrated approach not only conveyed theoretical content but also fostered a psychologically safe environment for reflection and behavioral change.

Unlike conventional stress management programs, which are often limited to didactic sessions or passive mindfulness exposure, this intervention offered a participatory, theory-driven format tailored to residents' lived experiences. Its iterative development process, informed by both expert and participant input, ensured contextual and cultural fit. This feature may explain its high acceptability, a known barrier in previous mental health programs for medical trainees. Acceptability is especially crucial in psychiatric education, where the emotional demands of clinical work often leave little cognitive space for additional training unless perceived as directly relevant and feasible. This study's strengths include its mixed-methods design, which enables both statistical generalization and nuanced interpretation. The integration of quantitative screening with qualitative exploration provided a holistic understanding of the relationship between coping and mental health, while the co-development of the intervention ensured contextual relevance. Active participant involvement increased the ecological validity of findings and the feasibility of real-world implementation.

6. Conclusions

6.1. Conclusion

This study found that psychiatry residents exhibit relatively high levels of psychopathological symptoms, particularly somatization, depression, and anxiety. These symptoms are significantly associated with maladaptive coping strategies. While intrinsic factors such as age, gender, and marital status were not statistically linked to increased psychopathology, two extrinsic factors, educational funding source and career motivation, were identified as significant contributors to

psychological distress. In contrast, the use of adaptive coping strategies demonstrated a protective role. The Theory of Planned Behavior (TPB)-based mental health promotion module developed in this study was found to be valid, contextually relevant, and effective in enhancing residents' intention and practice of adaptive coping behaviors.

6.2. Implications

The findings have broad implications for medical education policy, institutional well-being initiatives, and the design of future training curricula. Integrating structured, theory-based interventions into residency programs could shift mental health promotion from reactive support to proactive capacity-building. Institutions should prioritize psychosocial curricula, not only as remedial tools but as integral components of professional development. In resource-limited settings, leveraging local expertise and participatory design, as modeled in this study, can foster ownership and sustainability. This approach could improve residents' psychological resilience, reduce the burden of mental health symptoms, and promote healthier coping behaviors.

Future research should include longitudinal follow-up, randomized controlled designs, and multicenter comparisons to evaluate long-term effectiveness and scalability. Further investigation into mediators (e.g., resilience, burnout) and moderators (e.g., gender, cultural values) of intervention outcomes could refine the model. Finally, adaptation of the TPB-based module for other specialties and healthcare worker populations may extend its relevance and impact.

6.3. Limitations

Nevertheless, several limitations must be acknowledged. First, self-reported data are subject to social desirability bias, particularly in collectivist cultures where discussing psychological difficulties may be stigmatized. Second, the study's single-institution scope limits generalizability, especially to programs with differing curricula or institutional support systems. Third, the intervention evaluation was conducted shortly after module delivery, precluding conclusions about long-term effects on coping behavior and psychological symptoms. Additionally, the relatively small sample size and lack of a control group constrain the ability to infer causality.

6.4. Future Research Directions

Future studies should employ longitudinal and multi-center designs to evaluate the sustained effectiveness of TPB-based interventions across diverse settings. Randomized controlled trials could further strengthen evidence of causal relationships. Additional exploration into specific moderating factors such as personality traits, supervisor support, and institutional culture may refine the model and enhance its applicability.

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