

Emergence of Suicide from Ideation to Action among Medical Students: A Qualitative Study

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ABSTRACT

Objective: This study aimed to explore the risk and protective factors involved in the emergence and progression of suicidal thoughts toward suicidal behavior among medical students.

Methods and Materials: This qualitative study was conducted using an inductive qualitative content analysis approach. Data were collected through semi-structured interviews with medical interns and residents enrolled at universities of medical sciences in Tehran, Iran, during 2025. Participants were recruited using purposive and snowball sampling to ensure access to individuals capable of providing rich and relevant experiences regarding the phenomenon under investigation. Sampling and interviewing continued until theoretical saturation was achieved, resulting in 11 completed interviews. The interviews were analyzed using inductive qualitative content analysis through a systematic process of coding, categorization, comparison, and abstraction. MAXQDA software was used to facilitate systematic data management, coding, retrieval, and organization throughout the analytical process.

Findings: The analysis indicated that the emergence of suicidal ideation and its potential progression toward suicidal action among medical students resulted from an interaction between multiple occupational, educational, interpersonal, and psychosocial factors. Occupational and academic pressures, problematic workplace relationships, stress arising from professional responsibilities, and perceived social pressures emerged as major risk factors that intensified psychological distress and vulnerability to suicidal thoughts. Conversely, social and emotional support functioned as important protective mechanisms by reducing psychological strain, strengthening coping capacity, and potentially interrupting the progression from suicidal ideation toward suicidal behavior. The findings therefore suggest that suicidality among medical students develops through a multidimensional and dynamic process rather than as a consequence of a single isolated factor.

Conclusion: Suicidal ideation and its progression toward action among medical students appear to be shaped by the cumulative interaction of academic, occupational, interpersonal, and social stressors, while supportive social and emotional relationships may provide an important protective buffer.

Keywords: Suicide; Suicidal Ideation; Medical Students; Mental Health; Risk Factors; Protective Factors; Social Support

1. Introduction

Suicide is a major public health concern that affects individuals, families, health systems, and societies across different cultural and socioeconomic settings. Suicidal behavior exists along a continuum that may begin with passive thoughts about death, progress to active suicidal ideation and planning, and in some cases culminate in a suicide attempt or death. Although this progression is not necessarily linear, understanding the processes through which suicidal thoughts emerge, intensify, and potentially translate into action is essential for effective prevention. Contemporary evidence indicates that suicidal behavior is rarely attributable to a single cause; rather, it develops through the interaction of psychological vulnerability, social adversity, occupational stress, impaired coping, mental disorders, and reduced access to protective resources (Al-Mamun et al., 2025; Riera-Serra et al., 2024). This multifactorial nature makes suicide prevention particularly challenging in populations exposed simultaneously to intensive educational, occupational, and interpersonal pressures.

Medical students and physicians constitute one such vulnerable population. Medical training is widely regarded as demanding because it combines a heavy academic burden, repeated high-stakes examinations, prolonged working hours, exposure to human suffering and death, competitive environments, and considerable responsibility for patient care. These pressures are often intensified during internship and residency, when trainees move from predominantly theoretical education to continuous clinical decision-making and direct accountability for patients. A growing body of research has documented substantial rates of psychological distress, depressive symptoms, burnout, suicidal ideation, and other mental health difficulties among medical trainees (Mata et al., 2015; Mateen et al., 2024). These findings have raised concerns that the organizational and cultural structure of medical education itself may contribute to the development or worsening of psychological vulnerability among trainees.

Depression represents one of the most consistently identified psychological problems among resident physicians. A systematic review and meta-analysis conducted by Mata et al. showed that depressive symptoms are common during residency training and may affect a considerable proportion of residents across different health-care systems (Mata et al., 2015). Depression is especially

relevant to the study of suicide because it is among the strongest clinical correlates of suicidal ideation and suicidal behavior. Systematic evidence concerning depressive disorders further indicates that factors such as greater symptom severity, hopelessness, prior suicidal behavior, comorbidity, and other markers of psychological burden are associated with increased risk of suicidal ideation, suicide attempts, and suicide mortality (Riera-Serra et al., 2024). Therefore, the high prevalence of depression among medical trainees should not be viewed only as an educational or occupational health problem but also as a potentially important component of suicide risk.

Beyond depressive symptoms, medical residents commonly experience anxiety, stress, and burnout. Research among postgraduate medical residents has demonstrated substantial levels of depression, anxiety, and stress, reflecting the cumulative psychological burden associated with postgraduate medical education (Sadiq et al., 2019). Burnout is particularly important because it represents a condition of emotional exhaustion, depersonalization, and reduced professional efficacy that may arise when chronic workplace demands exceed available personal and organizational resources. Demanding clinical training, repeated exposure to stressful circumstances, sleep disruption, and insufficient recovery time can gradually erode psychological resilience and increase emotional exhaustion (Thomas & Reddy, 2023). When such pressures remain unresolved, residents may experience diminished coping capacity, alienation from their profession, impaired subjective well-being, and a greater sense of entrapment within their occupational role.

The association between excessive work demands and suicidality has been demonstrated more directly among resident physicians. A nationwide study of resident physicians found that overwork and burnout were significantly related to suicidal ideation, emphasizing the importance of occupational structure in understanding suicide risk among physicians in training (Ishikawa, 2022). Long working hours, night shifts, sleep deprivation, insufficient opportunities for rest, and continuous clinical responsibility can affect emotional regulation, judgment, interpersonal functioning, and perceived control. These conditions may be particularly harmful when trainees feel unable to reduce their workload or withdraw temporarily from demanding rotations. Thus, suicidal ideation among medical residents may emerge not only from individual psychopathology but also from the interaction between

personal vulnerability and chronically stressful organizational conditions.

The wider evidence on physicians and health-care workers similarly supports the concern that suicide risk is elevated within medical professions. A systematic review and meta-analysis examining suicide among physicians and health-care workers highlighted the seriousness of suicidal mortality in these occupational groups and emphasized the distinctive pressures associated with health-care practice (Dutheil et al., 2019). Health professionals have direct exposure to suffering, disease, trauma, medical errors, ethical dilemmas, and death, while simultaneously being expected to maintain emotional composure and professional competence. They may also have greater knowledge of potentially lethal methods than members of the general population. Consequently, occupational stressors may interact with professional access, stigma surrounding help-seeking, and fear of adverse career consequences to create a distinctive pattern of suicide risk within medicine.

The problem is already evident during undergraduate medical education. A study among medical students in Western India reported suicidal ideation and identified several associated predictors, demonstrating that suicidal thoughts can emerge before the transition to residency and independent clinical responsibility (Desai et al., 2021). A systematic review focusing specifically on suicide and suicidal ideation among medical students similarly concluded that suicidality represents a significant global problem within this population (Mateen et al., 2024). These findings suggest that vulnerability may accumulate throughout the medical education trajectory. Academic pressure, competition, fear of failure, financial concerns, limited leisure, disrupted social relationships, and gradual exposure to clinical responsibility may begin during undergraduate education and intensify during internship and residency.

Evidence from Iran also points to the presence of suicidal ideation among medical students. Earlier research assessing the frequency of suicidal thoughts among medical students demonstrated that suicidal ideation is not absent from Iranian medical education and warrants systematic attention (Mohammadinia et al., 2012). More recent evidence among students at an Iranian university of medical sciences has further shown that suicidal thoughts are related to life skills and perceived social support, highlighting the role of both individual capabilities and interpersonal resources (Nasirzadeh et al., 2025). These findings are important because they indicate that suicide risk among medical

trainees in Iran should be understood within the broader context of personal coping, social relationships, educational pressures, and the support available within universities and families.

The Iranian medical context has also been affected by major systemic stressors in recent years. Reports concerning physician suicide during the COVID-19 pandemic in Iran drew attention to the psychological burden experienced by physicians during periods of extraordinary professional demand (Saeed et al., 2021). Although pandemic-related circumstances were exceptional, they revealed broader vulnerabilities within the medical profession, including prolonged working hours, uncertainty, fear of adverse outcomes, emotional exhaustion, exposure to death, and limited opportunities for psychological recovery. These conditions may resemble, albeit in intensified form, some of the chronic pressures faced by interns and residents during routine clinical training. Accordingly, physician suicide should not be conceptualized solely as an individual mental health event but also as a possible outcome shaped by workplace structures, professional culture, and insufficient systemic support.

Social support is among the most frequently identified protective factors against suicidal ideation and psychological distress. Perceived availability of supportive family members, friends, peers, colleagues, supervisors, and mental health professionals can reduce feelings of isolation and increase an individual's capacity to cope with crises. Iranian research has shown that religious beliefs, social support, coping strategies, and general health may contribute to the prediction of suicidal behavior among university students (Asadi et al., 2013). Similarly, recent findings among medical sciences students have emphasized the inverse relationship between perceived social support and suicidal thoughts (Nasirzadeh et al., 2025). These results suggest that social connectedness may interrupt pathways from distress to suicidal ideation by increasing emotional security, facilitating help-seeking, and providing practical assistance during periods of severe stress.

Protective factors are not limited to social support. Personal resilience, adaptive coping, emotion regulation, meaningful relationships, psychological flexibility, and perceived purpose may influence how individuals respond to demanding environments. Research on young medical professionals has shown that resilience is relevant to the impact of demanding clinical training on burnout, indicating that personal adaptive resources may buffer the psychological consequences of occupational stress (Thomas

& Reddy, 2023). Broader research on subjective well-being also highlights the importance of emotion regulation and individual psychosocial characteristics in shaping psychological functioning (Stupar-Rutenfrans et al., 2024). In the context of medical training, these capacities may influence whether stress is experienced as manageable challenge, chronic strain, or overwhelming entrapment.

The importance of protective factors is also supported by studies outside the medical population. Research examining suicidal behavior with an emphasis on both risk and protective factors has demonstrated that suicidality is best understood through the simultaneous consideration of vulnerability and buffering mechanisms (Kazemi Rezaei et al., 2023). Such an approach is valuable because the presence of risk factors does not inevitably result in suicidal behavior. Two individuals exposed to similar stressors may experience very different outcomes depending on access to emotional support, coping capacity, personal beliefs, resilience, perceived future possibilities, and willingness to seek professional assistance. For medical students and residents, this means that understanding only the sources of stress provides an incomplete picture unless the factors that prevent suicidal thoughts from developing or progressing are also examined.

A particularly important conceptual issue concerns the transition from suicidal ideation to suicidal action. Suicidal thoughts are more common than suicide attempts, and only a subset of individuals who experience ideation proceed to planning or action. Therefore, factors associated with the emergence of suicidal thoughts may not be identical to those involved in their escalation. Studies using predictive and computational approaches have increasingly attempted to identify combinations of variables associated with suicidal behavior among psychologically vulnerable populations (Al-Mamun et al., 2025). Clinical systematic reviews have likewise distinguished predictors of suicidal ideation from those of suicide attempts and suicide death (Riera-Serra et al., 2024). This distinction is especially relevant for prevention because interventions designed to reduce initial distress may differ from interventions required when an individual has developed persistent ideation, intent, planning, or access to lethal means.

In medical education settings, the transition from ideation to more serious suicidal behavior may be shaped by specific contextual processes that are difficult to capture through standardized questionnaires alone. Quantitative studies can estimate prevalence and identify statistical associations with depression, burnout, workload, social support, or resilience,

but they may not adequately explain how these factors are experienced, interpreted, and connected over time. For example, the same extended shift may be perceived by one resident as difficult but manageable and by another as evidence of exploitation, entrapment, or loss of control. Similarly, supervisory criticism may function as routine educational feedback in one context but as humiliation or abuse in another. Understanding these subjective meanings is necessary for identifying how occupational experiences become psychologically linked to suicidal thinking.

Qualitative research is therefore particularly appropriate for investigating the emergence of suicidality as a process. By focusing on participants' lived experiences, qualitative methods can identify mechanisms, turning points, contextual pressures, and protective processes that may not be anticipated in predefined survey instruments. This is particularly important in settings where hierarchical professional relationships, cultural expectations, stigma regarding mental health, family pressures, financial constraints, and institutional policies may shape both suicidal experiences and willingness to disclose them. Qualitative analysis can also illuminate how individual and systemic factors interact, rather than treating them as isolated variables.

Existing research has generated substantial evidence concerning the prevalence and correlates of suicidal ideation among medical students and residents, including depression, anxiety, stress, overwork, burnout, weak social support, and reduced resilience (Desai et al., 2021; Ishikawa, 2022; Mateen et al., 2024). However, less is known about how medical trainees themselves describe the emergence of suicidal thoughts, the conditions under which these thoughts intensify, and the protective experiences that may interrupt progression toward suicidal action. This gap is particularly important in Iran, where available research has often focused on the frequency or statistical predictors of suicidal ideation rather than the experiential pathway through which suicide-related thoughts develop within the specific organizational and cultural context of medical training (Asadi et al., 2013; Mohammadinia et al., 2012; Nasirzadeh et al., 2025).

A deeper understanding of this process may have direct implications for medical universities, teaching hospitals, residency programs, and mental health services. If suicidal experiences are associated not only with individual psychological vulnerability but also with modifiable workplace conditions, interventions should extend beyond individual counseling. Preventive strategies may need to address duty schedules, workload, sleep deprivation,

supervisory relationships, abuse of hierarchical power, accessibility of leave, financial insecurity, accommodation problems, professional uncertainty, and confidential access to psychological care. At the same time, strengthening social support, resilience, adaptive coping, positive professional identity, and access to trusted individuals may help create a more comprehensive suicide-prevention framework within medical education.

Therefore, the aim of the present study was to explore the risk and protective factors involved in the emergence and progression of suicidality from ideation to action among medical interns and residents.

2. Methods and Materials

2.1. Study Design and Participants

The present study employed a qualitative research design and was classified as an inductive content analysis. In this approach, the researcher avoids using predetermined categories, and the principal categories and themes are derived directly from the data. The starting point of this method is the research question and objective rather than hypotheses derived from a particular theoretical framework. This approach enables the researcher to become fully immersed in the data and develop new insights. Accordingly, this study sought to explore and represent participants' perspectives regarding the emergence of suicide in an exploratory manner, without judgment or the imposition of predetermined meanings.

The study population consisted of all medical interns and specialty residents enrolled at universities of medical sciences in Tehran, Iran, during 2025. Purposive sampling was used in this study. This sampling strategy was selected to identify and recruit key informants who, because of their direct experience or specialized knowledge, could provide the richest information concerning the phenomenon under investigation, namely suicide. Accordingly, the researcher deliberately approached participants who had the greatest level of knowledge of and relevance to the research topic in order to obtain credible, precise, and experience-based data. In addition, snowball sampling was used as a supplementary strategy to gain access to a broader range of knowledgeable individuals who were difficult to identify directly. Following each interview, participants were asked to introduce other eligible and knowledgeable individuals within their professional or social networks who could potentially participate in the study.

In qualitative research, sample size is not predetermined; rather, data collection continues until theoretical saturation is reached, that is, the point at which new data no longer add substantive information to the findings. In the present study, interviews continued until saturation was achieved. Ultimately, based on the criterion of theoretical saturation, 11 face-to-face interviews were conducted with medical interns and specialty residents. Data analysis indicated that the interviews had achieved theoretical saturation and that the identified themes had been sufficiently developed.

Fieldwork lasted four months. During this period, following the identification and recruitment of eligible participants, semi-structured interviews were conducted face-to-face. Each interview lasted approximately 60 minutes on average. With participants' permission, all interviews were audio-recorded and transcribed immediately after each session in order to preserve the authenticity and accuracy of the data and to provide the basis for subsequent analysis.

2.2. Measures

Given the exploratory nature of the study and the need to obtain participants' perspectives, semi-structured interviews were selected as the primary data collection instrument. The interview questions were developed directly on the basis of the study objectives and research questions. The process began with the step-by-step development of the interview questions. To establish the validity of the interview protocol, a content validity approach based on expert judgment was employed. For this purpose, the questions were reviewed by five faculty members with expertise in mental health and qualitative research methodology, and their comments regarding the accuracy, relevance, and clarity of the questions were collected. In addition, one pilot interview was conducted with an eligible individual who was not included in the main study sample. Based on expert feedback and the practical experience gained from the pilot interview, final revisions were made to the wording, sequence, and content of the questions to ensure adequate validity of the research instrument.

2.3. Data Analysis

Data obtained from the interviews were analyzed using qualitative content analysis with an inductive approach. MAXQDA software was used to facilitate systematic data management, coding, organization, and retrieval throughout the analytical process.

To assess the reliability and stability of the coding process in the inductive content analysis, intercoder agreement was used. After the researcher developed the initial set of codes and categories, four interviews were randomly selected. The transcripts of these interviews, together with the preliminary coding guide, were provided to a second coder, a faculty member familiar with qualitative research methods, who independently coded the material. The percentage of agreement between the two coders was then calculated using the intercoder agreement formula, as follows:

$$\text{Percentage agreement} = \frac{\text{Number of agreements}}{(\text{Number of agreements} + \text{Number of disagreements})} \times 100$$

The calculated agreement coefficient was 87%, indicating satisfactory reliability of the analytical process. An agreement level above 80% is generally considered indicative of acceptable reliability.

3. Findings and Results

The participants' demographic characteristics are presented in Table 1.

Table 1

Demographic Characteristics of the Participants

Participant Code	Age	Gender	Specialty	Marital Status	Housing Status	Monthly Income	Year of Residency
1	33 years	Female	Pediatrics	Single	Rented accommodation	19 million tomans	Fourth year
2	30 years	Female	Emergency Medicine	Single	Rented accommodation	18 million tomans	First year
3	35 years	Male	Neurology	Married	Rented accommodation	19 million tomans	Fourth year
4	36 years	Male	Cardiology	Married	Rented accommodation	23 million tomans	Fourth year
5	34 years	Female	Cardiology	Married	Rented accommodation	23 million tomans	Fourth year
6	35 years	Female	Minor Specialty	Single	Rented accommodation	18 million tomans	First year
7	33 years	Male	Neurosurgery	Married	Rented accommodation	23 million tomans	Fourth year
8	35 years	Female	Surgery	Single	Rented accommodation	18 million tomans	Final year
9	34 years	Female	Dermatology	Single	Rented accommodation	17 million tomans	Fourth year
10	29 years	Male	Pediatrics	Married	Rented accommodation	23 million tomans	Fourth year
11	29 years	Female	Pathology	Single	Dormitory	17 million tomans	First year

Based on the interviews conducted with medical residents regarding suicide-related risk and protective factors, seven subthemes and 53 initial codes were extracted. The risk-factor subthemes included structural and burnout-related pressures, inappropriate workplace relationships and

unequal power structures, psychological pressure arising from professional responsibilities, and occupational and structural constraints. The protective-factor subthemes included interpersonal and systemic support networks, individual capacities, and self-care and supportive strategies.

Table 2

Thematic Analysis of Suicide Risk Factors Extracted from Interviews With Medical Residents

Frequency	Initial Codes	Subtheme	Main Theme
9	Heavy workload	Structural and burnout-related pressures	Risk factors
16	Long and excessive compulsory on-call shifts	Structural and burnout-related pressures	Risk factors
5	Insufficient sleep and prolonged overnight wakefulness	Structural and burnout-related pressures	Risk factors
8	Lack of time for rest, recreation, and social interaction	Structural and burnout-related pressures	Risk factors
6	Physical and psychological exhaustion	Structural and burnout-related pressures	Risk factors
3	Working with critically ill and emergency patients	Structural and burnout-related pressures	Risk factors
5	Shortage of staff and on-call personnel	Structural and burnout-related pressures	Risk factors
2	Feeling trapped in work	Structural and burnout-related pressures	Risk factors

3	Restrictions on taking leave	Structural and burnout-related pressures	Risk factors
16	Use of sedatives and stimulants	Structural and burnout-related pressures	Risk factors
21	Humiliation, insults, and disrespect from faculty members and senior residents	Inappropriate workplace relationships and unequal power structures	Risk factors
10	Excessive strictness by faculty members and senior residents	Inappropriate workplace relationships and unequal power structures	Risk factors
5	Unquestioning obedience	Inappropriate workplace relationships and unequal power structures	Risk factors
1	Deprivation of access to hospital facilities	Inappropriate workplace relationships and unequal power structures	Risk factors
4	Master-subordinate hierarchical structure	Inappropriate workplace relationships and unequal power structures	Risk factors
7	Assignment of heavy and compulsory duties	Inappropriate workplace relationships and unequal power structures	Risk factors
2	Lack of supervision and accountability among faculty members	Inappropriate workplace relationships and unequal power structures	Risk factors
3	High occupational stress	Psychological pressure arising from professional responsibilities	Risk factors
1	Difficult and continuous examinations	Psychological pressure arising from professional responsibilities	Risk factors
1	Witnessing patient deaths	Psychological pressure arising from professional responsibilities	Risk factors
1	Difficulty passing specialty examinations	Psychological pressure arising from professional responsibilities	Risk factors
4	Intolerance of errors and mistakes	Psychological pressure arising from professional responsibilities	Risk factors
4	Concern about complaints and legal liability	Psychological pressure arising from professional responsibilities	Risk factors
6	Inability to withdraw from the program	Psychological pressure arising from professional responsibilities	Risk factors
7	Pressures arising from private life	Psychological pressure arising from professional responsibilities	Risk factors
10	Difficulty securing housing and dormitory accommodation	Psychological pressure arising from professional responsibilities	Risk factors
4	Family and societal pressure and coercion to pursue medicine and specialization	Psychological pressure arising from professional responsibilities	Risk factors
2	Lack of interest in the specialty	Occupational and structural constraints	Risk factors
6	Uncertainty regarding the future of the medical profession and employment	Occupational and structural constraints	Risk factors
2	Constraints associated with the general medical training period	Occupational and structural constraints	Risk factors
1	Concern about replacement by artificial intelligence	Occupational and structural constraints	Risk factors
3	Increased medical education capacity and workforce oversupply	Occupational and structural constraints	Risk factors
3	Inability to hold a second job	Occupational and structural constraints	Risk factors
11	Mismatch between salary and workload	Occupational and structural constraints	Risk factors

Table 3

Thematic Analysis of Protective Factors Against Suicide From the Perspective of Medical Residents

Frequency	Initial Codes	Subtheme	Main Theme
4	Talking to a trusted person	Interpersonal and systemic support networks	Protective factors
11	Financial and emotional support from family	Interpersonal and systemic support networks	Protective factors
1	Quality of intimate relationships	Interpersonal and systemic support networks	Protective factors

2	Marital status	Interpersonal and systemic support networks	Protective factors
1	Employment of an in-house physician	Interpersonal and systemic support networks	Protective factors
1	Rotational appointment of the chief resident	Interpersonal and systemic support networks	Protective factors
2	Understanding and empathy from the chief resident	Interpersonal and systemic support networks	Protective factors
5	Division of labor and cooperation among staff	Interpersonal and systemic support networks	Protective factors
3	Educational support and opportunities for learning	Interpersonal and systemic support networks	Protective factors
1	Structural supervision of excessive on-call shifts	Interpersonal and systemic support networks	Protective factors
1	Responsible concern for the family's future	Interpersonal and systemic support networks	Protective factors
3	Access to psychologists and psychiatrists	Interpersonal and systemic support networks	Protective factors
2	Creating a psychologically safe environment for discussing problems and concerns	Interpersonal and systemic support networks	Protective factors
7	Spiritual and religious beliefs	Individual capacities	Protective factors
6	Resilient and adaptive personality characteristics	Individual capacities	Protective factors
2	Passion for and interest in the specialty	Individual capacities	Protective factors
1	Constructive use of social media and online environments	Self-care and supportive strategies	Protective factors
1	Meditation and yoga	Self-care and supportive strategies	Protective factors
2	Planning for rest and recreation	Self-care and supportive strategies	Protective factors

4. Discussion

The present qualitative study explored the risk and protective factors involved in the emergence of suicidality among medical interns and residents and identified seven subthemes encompassing 53 initial codes. The risk factors were organized into four principal subthemes: structural and burnout-related pressures, inappropriate workplace relationships and unequal power structures, psychological pressure arising from professional responsibilities, and occupational and structural constraints. Protective factors were organized into three subthemes: interpersonal and systemic support networks, individual capacities, and self-care and supportive strategies. Taken together, the findings indicate that suicidality among medical trainees cannot be adequately explained through a purely individual or psychopathological framework. Instead, suicidal thoughts appear to emerge within a complex interaction between demanding clinical environments, organizational structures, interpersonal experiences, perceived entrapment, personal vulnerability, and the availability or absence of protective resources.

One of the most prominent findings was the role of structural and burnout-related pressures, including excessive workload, prolonged and compulsory on-call shifts, insufficient sleep, lack of opportunities for rest and recreation, physical and psychological exhaustion, staff shortages, restrictions on leave, and a sense of being trapped in work. These findings are consistent with previous evidence showing that excessive workload and burnout are closely related to suicidal ideation among resident physicians. Ishikawa found that overwork and burnout were significantly associated with suicidal ideation among residents, emphasizing that prolonged occupational demands can become clinically relevant risk factors rather than merely routine inconveniences of medical training (Ishikawa, 2022). Similarly, Thomas and Reddy highlighted the harmful impact of demanding clinical training on burnout among young medical professionals and underscored the role of resilience in shaping individual responses to such demands (Thomas & Reddy, 2023). The current findings extend this literature by showing that residents do not experience workload simply as a quantitative burden; rather, its psychological impact is intensified when excessive work is accompanied by lack of

autonomy, inadequate recovery time, and the perception that escape from the system is impossible.

The importance of chronic exhaustion is also supported by the broader literature on mental health among residents. Mata et al. documented a high prevalence of depression and depressive symptoms among resident physicians, demonstrating that residency represents a period of substantial vulnerability to psychological distress (Mata et al., 2015). Sadiq et al. similarly found considerable levels of depression, anxiety, and stress among postgraduate medical residents, indicating that multiple dimensions of psychological burden may coexist during specialist training (Sadiq et al., 2019). In the present study, sleep deprivation, night shifts, prolonged duty hours, and physical exhaustion were repeatedly described as elements of the pathway toward psychological deterioration. These experiences may contribute to reduced emotional regulation, hopelessness, irritability, cognitive fatigue, and decreased capacity to cope with additional stressors. In this sense, the findings support a cumulative stress model in which persistent occupational demands gradually erode psychological resources and increase vulnerability to suicidal thinking.

The second major risk-related theme concerned inappropriate workplace relationships and unequal power structures. Participants reported humiliation, insults, disrespect from faculty members and senior residents, excessive strictness, unquestioning obedience, authoritarian hierarchical relationships, forced assignment of heavy duties, lack of supervision, and weak accountability among senior staff. This finding is particularly important because it identifies relational and organizational processes that may contribute independently to psychological distress. Residency occurs within strongly hierarchical systems in which junior trainees often depend on senior physicians for education, evaluation, career advancement, scheduling, and access to learning opportunities. When this hierarchy is experienced as humiliating, punitive, or exploitative, trainees may perceive themselves as powerless and unable to challenge unfair treatment. This sense of powerlessness may intensify emotional exhaustion and perceived entrapment, both of which may contribute to suicidal ideation.

The broader evidence on suicide among physicians and health-care workers supports the importance of occupational context. Dutheil et al. demonstrated through systematic review and meta-analysis that suicide among physicians and health-care workers represents a serious occupational health problem (Dutheil et al., 2019). Although their findings

addressed suicide at a broader professional level, the current results suggest that interpersonal dynamics within medical institutions may be one pathway through which occupational environments influence suicide risk. Similarly, the identification of physician suicide during the COVID-19 pandemic in Iran drew attention to the psychological consequences of extreme professional pressure and insufficient systemic support (Saeed et al., 2021). The present findings indicate that even outside crisis conditions, chronic workplace hostility and unequal power relations may create sustained psychological strain.

Psychological pressure arising from professional responsibility constituted another central theme. Participants described high occupational stress, difficult and repeated examinations, exposure to patient death, intolerance of mistakes, fear of complaints and legal liability, inability to withdraw from training, private-life pressures, housing difficulties, and family or societal pressure to pursue medicine and specialization. This finding illustrates that the psychological burden of medical training arises from multiple simultaneous domains. Residents are not only trainees but also clinicians, family members, financial decision-makers, and individuals expected to fulfill strong social and professional expectations. The accumulation of these roles may generate a sense that failure in one domain threatens identity and future security across several domains simultaneously.

These findings are compatible with evidence showing that medical students experience suicidal ideation in association with multiple academic and psychosocial stressors. Desai et al. identified suicidal ideation among undergraduate medical students and demonstrated that suicidality is already present during medical education before the full responsibilities of residency begin (Desai et al., 2021). Mateen et al., in their systematic review of suicide and suicidal ideation among medical students, similarly concluded that suicidality is a significant problem within this population and is linked to a range of psychological and educational stressors (Mateen et al., 2024). The current study adds qualitative detail by illustrating how these pressures may be subjectively experienced as cumulative, inescapable, and identity-threatening. In particular, fear of making mistakes and concern about legal consequences may transform ordinary performance anxiety into persistent psychological vigilance, especially when residents perceive themselves as insufficiently supported.

Another important finding concerned occupational and structural constraints, including lack of interest in the

specialty, uncertainty about future employment, limitations associated with medical training, concern about replacement by artificial intelligence, increasing numbers of medical graduates, inability to hold a second job, and mismatch between salary and workload. These findings suggest that suicidality may also be influenced by perceptions of an uncertain or unrewarding professional future. Medical training requires substantial time, financial investment, personal sacrifice, and delayed career stability. When residents believe that these sacrifices may not result in secure employment, adequate income, professional autonomy, or meaningful career progression, the psychological costs of training may become more difficult to justify. This perceived discrepancy between effort and expected reward may contribute to disappointment, frustration, and hopelessness.

The findings regarding economic and occupational insecurity are especially relevant because suicidal behavior is often shaped by the interaction between psychological distress and social adversity. Research on suicidal behavior has emphasized that risk factors should not be examined in isolation but rather as part of interacting networks of vulnerability (Kazemi Rezaei et al., 2023). Likewise, predictive work in other vulnerable populations suggests that suicidal behavior emerges from combinations of mental health problems and contextual variables rather than from one dominant predictor (Al-Mamun et al., 2025). The current findings support this multidimensional interpretation. For participants, financial strain, housing problems, uncertain career prospects, family expectations, and workplace pressure were not separate experiences; rather, they formed interconnected stress systems that could intensify psychological vulnerability.

The first major protective theme involved interpersonal and systemic support networks. Participants identified speaking with a trusted person, financial and emotional family support, quality of intimate relationships, marital status, understanding from senior residents, cooperation among staff, educational support, structural supervision of excessive shifts, access to psychologists and psychiatrists, and creation of psychologically safe spaces for discussing problems. These findings strongly reinforce the protective role of social support. Nasirzadeh et al. found that perceived social support was related to suicidal thoughts among students of medical sciences, indicating that stronger social support may reduce vulnerability to suicidality (Nasirzadeh et al., 2025). Asadi et al. also identified social support, coping strategies, religious beliefs, and general health as

important predictors of suicide among university students (Asadi et al., 2013). The current findings extend this evidence by showing that support can operate at multiple levels, including family, peers, senior residents, faculty structures, and mental health services.

The importance of a psychologically safe environment emerged particularly clearly. Residents indicated that opportunities to discuss problems without fear of judgment or professional consequences could serve as protective mechanisms. This is noteworthy because physicians and trainees may avoid seeking mental health care due to stigma, confidentiality concerns, fear of career repercussions, or perceptions that distress reflects weakness. Earlier Iranian research has documented suicidal ideation among medical students, showing that the problem exists within the educational system and requires direct attention (Mohammadinia et al., 2012). However, identifying risk without creating confidential and acceptable pathways for disclosure may have limited preventive value. The present findings therefore suggest that institutional safety and trust are essential components of effective prevention.

Individual capacities constituted another protective theme. Participants identified spiritual and religious beliefs, resilient and adaptive personality characteristics, and interest in the medical specialty as factors that may reduce suicidal vulnerability. This finding is consistent with previous research indicating that religious beliefs can play a protective role in relation to suicidal behavior among university students (Asadi et al., 2013). It also aligns with evidence that resilience may buffer the adverse effects of demanding clinical training and reduce burnout among young medical professionals (Thomas & Reddy, 2023). Resilience does not imply the absence of distress; rather, it reflects the capacity to adapt, recover, and maintain functioning under difficult conditions. In the current study, resilience appeared to help residents interpret stress as temporary and manageable rather than permanent and overwhelming.

The identification of spiritual beliefs as a protective resource is also theoretically important because such beliefs may provide meaning, moral constraints, hope, and a framework for tolerating suffering. In addition, personal interest in one's specialty may strengthen professional identity and increase the perceived meaningfulness of demanding training. When residents experience their work as aligned with personal values and long-term goals, stress may be interpreted as purposeful sacrifice rather than meaningless burden. Conversely, lack of interest in the

specialty was identified as a risk factor, suggesting that the subjective meaning of professional activity may influence the psychological impact of workload.

Self-care and supportive strategies, including constructive use of social media, meditation, yoga, and deliberate planning for rest and recreation, constituted the final protective theme. Although these factors were reported less frequently than family support or resilience, they indicate that residents actively attempt to regulate stress through behavioral strategies. Research on subjective well-being has emphasized the importance of emotion regulation in psychological functioning (Stupar-Rutenfrans et al., 2024). The present findings are compatible with this perspective because practices such as meditation, structured rest, and recreational activity may support emotional regulation and reduce sustained physiological arousal. However, self-care strategies should not be viewed as substitutes for structural reform. Encouraging residents to meditate or rest is unlikely to be effective if institutional schedules systematically prevent adequate sleep, leave, or recovery.

5. Conclusion

Overall, the results support a process-oriented understanding of suicidality among medical trainees. Risk appears to emerge through the accumulation of structural, interpersonal, professional, financial, and psychological pressures, while protection is strengthened through supportive relationships, personal resilience, meaningful professional engagement, and access to care. This interpretation is consistent with systematic evidence showing that suicidal ideation and suicidal behavior have multiple and partially distinct predictors (Riera-Serra et al., 2024). The current findings further suggest that the transition from ideation toward action may be influenced by the degree to which residents perceive themselves as trapped, unsupported, exhausted, and unable to alter their circumstances. The results also highlight the importance of examining both risk and protective mechanisms simultaneously. Previous work has shown that protective factors can meaningfully modify the relationship between stress exposure and suicidal behavior (Kazemi Rezaei et al., 2023). Similarly, recent studies among medical sciences students indicate that perceived social support and life skills are relevant to suicidal thoughts (Nasirzadeh et al., 2025). Thus, effective prevention should not focus exclusively on identifying distressed individuals. It should also strengthen

the environmental and interpersonal resources that help medical trainees remain connected, hopeful, and able to seek assistance before suicidal thoughts intensify.

6. Limitations & Suggestions

This study has several limitations. First, the sample was limited to 11 medical interns and residents from universities of medical sciences in Tehran, and the findings therefore cannot be statistically generalized to all medical trainees in Iran or other countries. Second, participation was based on purposive and snowball sampling, which may have increased the likelihood of recruiting individuals with similar experiences or professional networks. Third, because suicide is a highly sensitive and stigmatized topic, some participants may have withheld personal experiences or moderated their responses because of concerns about confidentiality, professional judgment, or emotional discomfort. Fourth, the cross-sectional qualitative design captured participants' perspectives at one point in time and could not directly establish temporal or causal pathways from suicidal ideation to suicidal action. Finally, although efforts were made to strengthen the trustworthiness of the analysis through intercoder agreement, qualitative interpretation inevitably involves a degree of researcher subjectivity.

Future studies should examine suicidality among medical trainees using larger and more diverse samples from different universities, specialties, geographic regions, and stages of medical education. Longitudinal qualitative research could be particularly valuable for tracing changes in suicidal ideation over time and identifying critical transition points from temporary distress to persistent suicidal thinking or behavior. Mixed-methods studies could integrate qualitative findings with validated measures of burnout, depression, hopelessness, perceived entrapment, social support, resilience, and organizational climate. Comparative research across specialties may also clarify whether particular training environments or workload patterns are associated with greater vulnerability. In addition, future studies should investigate the perspectives of faculty members, residency program directors, hospital managers, and family members in order to develop a more comprehensive understanding of the organizational and interpersonal mechanisms influencing suicide risk.

Medical universities and teaching hospitals should develop multilevel suicide-prevention programs that address both individual vulnerability and institutional conditions.

Practical interventions should include monitoring excessive duty hours, ensuring adequate sleep and recovery opportunities, improving access to leave, reducing humiliating or abusive supervisory practices, establishing transparent mechanisms for reporting mistreatment, and improving fairness in workload distribution. Confidential and easily accessible psychological and psychiatric services should be available without fear of academic or professional consequences. Residency programs should also strengthen peer-support systems, mentoring, communication skills, and psychological safety within clinical teams. Financial and housing difficulties should be recognized as legitimate occupational stressors rather than peripheral concerns. Preventive strategies should further include resilience-building, stress-management training, structured opportunities for recreation, and mechanisms that enable trainees to seek support early, before distress progresses to persistent suicidal ideation or suicidal behavior.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Data collection commenced after obtaining ethical approval (IR.IAU.BA.REC.1404.016) and completing the necessary coordination with the relevant authorities.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contributed to this article.

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