



2024, 13 (3), 1157-1172 | Research Article

## Moderated Mediation Analysis Between Burnout and Suicidal Ideation Among Physicians in Türkiye: The Role of Meaning of Life and Satisfaction with Life

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### Abstract

In recent years, there has been a belief that there has been an increase in the rate of physician suicides in Türkiye due to the agenda of physician suicides in traditional and social media. While the profession of physician is considered one of the risky professions in terms of suicide ideation, some researchers state that there is no such effect among physicians, those who say that the profession is a risk factor for suicide usually explain that burnout is the cause. However, it is insufficient to explain physician suicides as a cause of burnout alone. In this study, a moderated mediation model was examined to explain how the indirect effect of burnout on physicians' suicidal ideation, through presence of meaning of life (PML), is managed by life with satisfaction (SWL). The sample consisted of 214 physicians working in Türkiye. Data were collected from the participants using Demographic Data, the Burnout Scale-Short Form, Life Satisfaction Scale, Meaning of Life Scale and Suicide Probability Scale. The analysis was tested through PROCESS Macro programme. In order to verify the significance of indirect effects, 5000 bootstrap random samples were used. The findings indicate that meaning of life acts as a mediator between burnout and suicidal ideation and that this mediation is influenced by life satisfaction in conclusion, this study examined the effect of burnout on suicide and the results suggest that the meaning of life and life satisfaction may play a protective role in relation to suicidal ideation.

**Keywords:** Burnout, Suicide Ideation, Meaning of Life, Satisfaction with Life, Moderated Mediation

Erdem, Metin & Apak, Hıdır (2024). Moderated Mediation Analysis Between Burnout and Suicidal Ideation Among Physicians in Türkiye: The Role of Meaning of Life and Satisfaction with Life, *Journal of the Human and Social Science Research*, 13 (3), 1157-1172.

<https://doi.org/itobiad.1483412>

Date of Submission	13.05.2024
Date of Acceptance	15.07.2024
Date of Publication	30.09.2024
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## Türkiye'deki Doktorlarda Tükenmişlik ve İntihar Düşüncesi Arasında Moderatörlü Aracılık Analizi: Yaşam Anlamı ve Yaşam Doyumunun Rolü

Metin Erdem<sup>1</sup>

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### Öz

Son yıllarda Türkiye'de geleneksel ve sosyal medyada doktor intiharlarının gündem olması nedeniyle doktor intiharları oranında bir artış olduğu kanısı olmuştur. Doktorluk mesleği intihar konusunda riskli mesleklerden biri sayılırken bazı araştırmacılar böyle bir etkinin olmadığını ifade etmektedirler. Doktorlarda mesleğin intihar için riski faktörü olduğunu söyleyenler genellikle bu duruma tükenmişliğin neden olduğunu düşünmektedirler. Ancak doktor intiharlarına tek başına tükenmişliğin bir neden olarak gerekçe gösterilmesi yetersizdir. Bu çalışmada, tükenmişliğin doktorların intihar etme düşüncesi üzerindeki dolaylı etkisinin, yaşamın anlamının varlığı (PML) aracılığıyla, yaşam doyumu (SWL) tarafından nasıl yönetildiğini açıklamak için bir moderatör aracılık modeli incelenmiştir. Örneklem Türkiye'de çalışan 214 doktordan oluşmaktadır. Katılımcılardan Demografik Bilgiler, Tükenmişlik Ölçeği-Kısa Formu, Yaşam Doyumu Ölçeği, Yaşamın Anlamı Ölçeği ve İntihar Olasılığı Ölçeği kullanılarak veri toplanmıştır. Analiz PROCESS Macro programı aracılığıyla test edilmiştir. Dolaylı etkilerin anlamlılığını doğrulamak amacıyla 5000 bootstrap rastgele örneklem kullanılmıştır. Bulgular, yaşamın anlamının tükenmişlik ve intihar düşüncesi arasında bir aracı görevi gördüğünü ve bu aracılığın yaşam doyumundan etkilendiğini göstermektedir. Sonuç olarak, bu çalışma tükenmişliğin intihar düşüncesi üzerindeki etkisini incelemiş ve bulgular yaşamın anlamı ve yaşam doyumunun intihar düşüncesi ile ilişkili olarak koruyucu bir rol oynayabileceğini düşüncesini ön plana getirmektedir.

**Anahtar Kelimeler:** Tükenmişlik, İntihar Düşüncesi, Yaşamın Anlamı, Yaşam Doyumu, Moderatörlü Aracılık

Erdem, Metin & Apak, Hıdır (2024). Türkiye'deki Doktorlarda Tükenmişlik ve İntihar Düşüncesi Arasında Moderatörlü Aracılık Analizi: Yaşam Anlamı ve Yaşam Doyumunun Rolü, *İnsan ve Toplum Bilimleri Araştırmaları Dergisi*, 13 (3), 1157-1172.

<https://doi.org/itobiad.1483412>

Geliş Tarihi	13.05.2024
Kabul Tarihi	15.07.2024
Yayın Tarihi	30.09.2024
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## Introduction

In recent years, suicides among physicians in Türkiye have been a topic of discussion both in the media and on social media. This situation has led to the perception that the suicide risk rate among physicians in Türkiye is high. However, due to the lack of information provided by TÜİK (2023) regarding professions, there is no clear statistical data on the subject. In studies on physicians and suicide, the impact of the profession on suicide is unclear. In some studies, on the subject, it has been found that profession does not have an impact on suicide (Bailey et al., 2018; Skegg et al., 2011), while others (Charlton, 1995; Dutheil et al., 2019; Hawton et al., 2011; Meltzer et al., 2008) indicate that it has an impact. The relationship between the profession and suicides is generally discussed in the context of the concept of burnout.

Professional burnout among physicians has been extensively discussed in the literature (Abdulrahman et al., 2018; Bhugra et al., 2008; Gardner et al., 2019). Most of the literature has examined the relationship between professional burnout in physicians and a range of personal and work-related factors. There are also studies focusing on the relationship between professional burnout and suicidal ideation among physicians (Pompili et al., 2010; Schernhammer and Colditz, 2004; Shanafelt et al., 2011). Long working hours, blame and isolation in the face of medical errors and adverse outcomes, and a "zero-tolerance for mistakes" culture can lead to burnout among physicians. Burnout, in turn, produces widespread consequences such as low-quality of care, increased medical errors, and dissatisfaction among both patient and providers, exacerbating the situation. Thus, physicians experiencing professional burnout may have suicidal ideations and often trying to cope with these ideations alone. While suicide is the ultimate tragic outcome, burnout is a complex condition that leads to various consequences (Stehman et al., 2019).

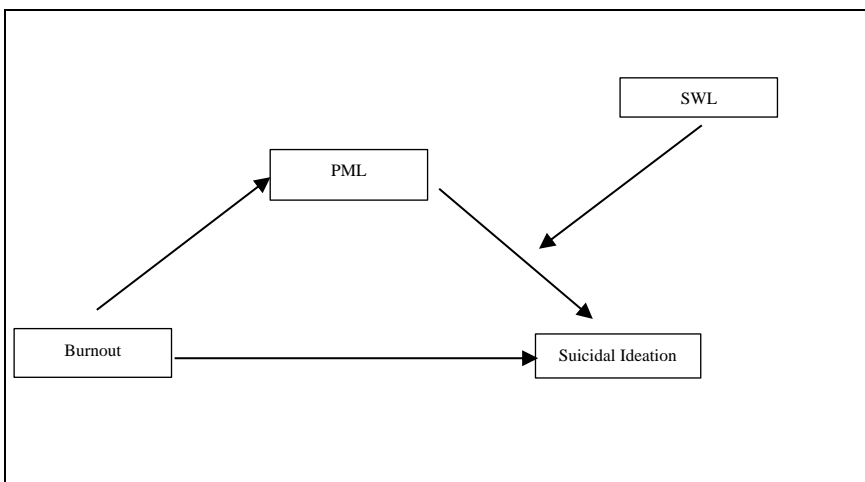
In their study, Hawton et al. (2004) reported that most of the physicians who committed suicide had significant problems at work (workload, long working hours, etc.). Another study investigating the prevalence of burnout and its relationship with suicidal ideations among medical residents, found that suicidal ideations were significantly more common in the group experiencing burnout compared to those who did not (Van der Heijden et al., 2008). A study on physicians conducted by Lheureux et al. (2016) found that the depletion of emotional and physical energy, feelings of helplessness and depression experienced by those facing burnout are expected to ultimately contribute to suicidal ideations. In a study exploring work-related factors and burnout in veterinarian and their association with suicidal tendencies, burnout was found to increase the suicide tendencies among veterinarians (Wallace, 2017). Another study examining the mediating role of burnout in the relationship between work-related stress and suicidal ideations in veterinarian found a positive association between burnout and suicidal ideations, with burnout mediating the relationship between work-related stressors and suicidal ideations (Andela, 2021).

Some studies, on the other hand, reveal that there is no direct link between burnout and suicidality, and that there are various variables such as depression that mediate this link (Menon et al., 2020). The World Health Organization's definition of burnout confirms this, stating that burnout is a professional distress syndrome indicating difficulties in multiple life domains rather than a clinical psychiatric diagnosis (WHO, 2019). From this perspective, this study focuses not on a direct relationship but on mediating variables and the meaning of life, which may reduce suicidal ideation.

In recent times, there has been a considerable amount of research on the positive effects of the sense of meaning in life on an individual's mental health (Steger, 2022; Glaw et al., 2017; Vos, 2016). Hooker et al. (2018) have suggested three ways in which the sense of meaning can impact mental health: a) reducing the experience of stress, b) enhancing adaptive coping skills, c) increased engagement in health behaviors. These statements can be applied to suicidal ideation and burnout. There is a significant body of literature emphasizing the protective role of spirituality in relation to suicide risk (Costanza et al., 2019; Heisel et al., 2016; Kalashnikova et al., 2022). A similar situation can be expressed in the relationship between burnout and the meaning of life. In other words, it can be stated that burnout and the meaning of life are in a reciprocal relationship (Hooker, et al., 2020). In particular, it can be stated that professional burnout, challenging working conditions, fatigue, etc. are negatively affected by the sense of meaning.

Life satisfaction generally describes an individual's overall well-being. This state of well-being is considered as the harmony between one's goals and achievements in life (Proctor, et al. 2009). Hankonen et al. (2001) suggested a clear relationship between life satisfaction and suicide in their 20-year follow-up study. The lack of life satisfaction, or dissatisfaction with life, has a long-term negative impact on suicide risk. Other studies, on the other hand, establish a similar relationship using different expressions and state that life satisfaction has a protective effect on suicide risk (Kim et al., 2021; Melo et al., 2022).

The aim of this study is to develop a model for the relationship between burnout, meaning of life, life satisfaction and suicidal ideation in physicians. Within this scope, it investigates the impact of burnout on suicidal ideations among physicians in Türkiye. It is thought that PML will be the mediator and SWL will be the moderator in the relationship between burnout and suicidal ideation. Therefore, there are two hypotheses of this study. 1) PML had a significant positive effect on the relationship between burnout and suicidal ideation; 2) SWL has a conditional indirect effect on the relationship between burnout and suicidal ideation (Figure 1). The indirect effect of burnout on suicidal ideation through PML is moderated by SWL.



**Figure 1** The hypothesized moderated mediation model

## Method

### Procedure and Participants

First of all, ethical approval for the study was obtained from the Ethics Committee of Bingöl University. Subsequently, the tools of the study were prepared through Google forms to reach the sample. Participation was entirely based on voluntary basis.

**Table 1.** Demographic Descriptive

Variable (N=214)	n (%)
<b>Gender</b>	
Female	%34.1(73)
Male	%65.9(141)
<b>Age, mean(sd)</b>	34.4 (8.78)
<b>Marital Status</b>	
Single	%36.4 (78)
Married	%60.7 (130)
Divorce	%2.8 (6)
<b>Professional Status</b>	
Specialist	%35.5 (76)
Generalist	%24.8 (53)
Associate	%32.2 (69)
Intern	%7.5 (16)
<b>Working Place</b>	
Public/University Hospital	%94.9 (203)
Private Hospital	%2.3 (5)
Private Clinical	%2.8 (6)
<b>Working Years</b>	
0-3 years	%23.4 (50)
4-6	%23.8 (51)
7-9	%14.5 (31)
10 +	%38.3 (82)

The study consists of 214 participants. When examining the demographic information in Table 1, 65.1% are male, 34.1% are female, the mean age is 34.4 (SD=8.789), marital status shows 60.7% married, 36.4% single, and 2.8% divorced. Regarding professional status, 35.5% are specialists, 24.8% are practitioners, 32.2% are assistants, and 7.5% are interns. As for the workplace, 94.9% work in government/university hospitals, 2.3% in private hospitals, and 2.8% in private clinics. The distribution of the working duration is as follows: 23.4% have worked for 0-3 years, 23.8% for 4-6 years, 14.5% for 7-9 years, and 38.3% for 10+ years.

## Measures

### Burnout Scale- Short Form

The scale developed by Pines (2005) was adapted to Turkish culture by Çapri (2013). When the adapted scale was examined, the variance (55%), eigenvalues (5.52), Cronbach alpha (.91) and test-retest reliability (.81) indicated the appropriateness of the scale. The Cronbach alpha value was found to be .94 in this study.

## Life Satisfaction Scale

The scale developed by Diener et al., (1985) was adapted to Turkish culture by Dağlı and Baysal (2016). The scale is a single-factor scale consisting of five items. When examining the Cronbach's alpha (.88) and test-retest reliability (.97), the scale was considered appropriate. The Cronbach alpha value for this study is .88.

## Meaning of Life Scale

The scale developed by Steger et al., (2006) and Demirdağ and Kalafat (2015) adapted it to Turkish culture. The scale consists of two factors and ten items. When the variance (68%), Cronbach alpha (.81 and .85) and test-retest reliability (.72 and .76) were examined in the adapted scale, it was understood that the scale was appropriate. In this study, the sub-dimension of the scale, the presence of meaning in life dimension, was used. The Cronbach alpha value of this sub-dimension is .89.

## Suicide Probability Scale

The scale developed by Cull and Gill (1988) was adapted to Turkish culture by Atlı et al. (2009). The scale consists of four factors and 36 items. The Cronbach's alphas for both the scale and the sub-dimension used in the study were (.84 and .84), and two split-half reliability analyses (.81 and .85) indicated the appropriateness of the scale. The Cronbach alpha value of the suicidal ideation sub-dimension used in the study is .82.

## Analysis

The data were analyzed using IBM SPSS (The Statistical Package for Social Sciences). Descriptive analyses and correlation analyses were used for participants' demographic information and the relationship between the tools used in the study. It was tested using the PROCESS MACRO program for SPSS (model 14) developed by Hayes (2013) for the model for moderate mediation. A random sample of 5000 bootstrap was used to confirm the significance of indirect effects.

In addition, an assessment was made in terms of multicollinearity before starting the analysis. For this, tolerance value ( $<.10$ ), variance inflation factor (VIF) ( $>10$ ) and condition index (CI) ( $CI < 30$ ) values were analysed (Şata, 2020). When the multicollinearity results of the study are analysed, it is seen that the values are within the acceptable range.

## Results

Before starting the moderated mediation analysis, the normality distributions and correlation relationships of the measurements were examined. When Table 2 is examined, it is seen that the skewness and kurtosis coefficients of the measures' values are normally distributed (Weston and Gore, 2006). When the correlation relationship of the scales was examined, there was a positive and significant relationships between burnout and suicidal ideation ( $r=.39, p<0.001$ ), negative and significant relationships between burnout and SWL ( $r=-.47, p<0.001$ ), negative and significant relationships between burnout and PML ( $r=-.31, p<0.001$ ), negative and significant relationships between suicidal ideation and SWL ( $r=-.36, p<0.001$ ), negative and significant relationships between suicidal ideation and PML ( $r=-.40, p<0.001$ ) and there was a positive and significant correlation between SWL and PML ( $r=.56, p<0.001$ ).

**Table 2.** Normality, Means, Standard Deviations and Correlations

Variables	Skewness / Kurtosis	M	SD	1	2	3	4
1.Burnout	-0.112 / -0.433	4.24	1.34	1.00			
2.Suicide Thoughts	1.92 / 2.84	1.30	0.39	.39*	1.00		
3.SWL	0.0633 / -0.752	2.58	0.90	-.47*	-.36*	1.00	
4.PML	-0.497 / 0.331	4.78	1.57	-.31*	-.40*	.56*	1.00

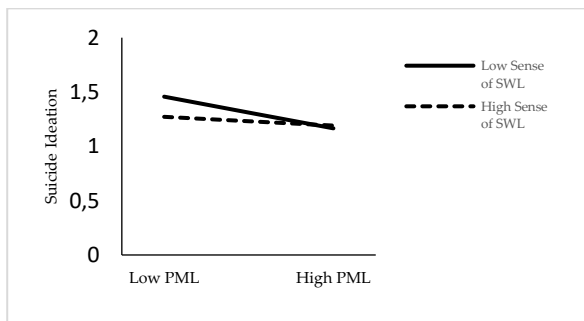
Note. N=214 \* p < .001 ; SWL, The satisfaction with life; PML, presence of meaning in life

When Table 3 is examined, the significant effect of burnout on the sought meaning is observed (b= -0.36, t=-4.85, 95% CI = -0.5178 / -0.2187). PML has a significant effect on suicidal ideation (b= -0.05, t= -3.20, 95% CI = -0.0960 / -0.0229); Burnout has a significant effect on suicidal ideation (b=0.07, t= 3.81, 95% CI= 0.0367 / 0.1150). The interactive effect (PML\*SWL) is significant (b=0.03, t= 2.19, 95% CI = 0.0038 / 0.0705). In other words, SWL positively affects the relationship between PML and suicidal ideation.

**Table 3.** Summary of analysis of moderated mediation analysis of SWL, PML and Burnout Predicting Suicide Ideation

Model	Explained Variables							
	PML				Suicide Ideation			
	β	SE	t	95% CI LLCI / ULCI	β	SE	t	95% CI LLCI / ULCI
Constant	6.34	0.33	18.81	5.6803 / 7.0098	1.80	0.23	7.64	1.3406 / 2.2722
Burnout	-0.36	0.07	-4.85	-0.5178 / -0.2187	0.07	0.01	3.81	0.0367 / 0.1150
PML					-0.05	0.18	-3.20	-0.0960 / -0.0229
SWL					-0.04	0.03	-1.30	-0.1108 / 0.0225
PMLxSWL					0.03	0.16	2.19	0.0038 / 0.0705
	R <sup>2</sup>	0.10			R <sup>2</sup>	0.26		

When Figure 2 is examined, it is seen that the conditional effect of SWL is significant at low (b=-0.09, t=-4.34, 95% CI= -0.1354 / -0.0509) and moderate (b=-0.05, t=-3.20, 95% CI= -0.0960 / -0.0229), but it loses its significance at a high level (b=-0.02, t= -0.97, 95% CI= -0.0778 / -0.0265).



**Figure 2.** SWL moderated the effect PML on suicide ideation.

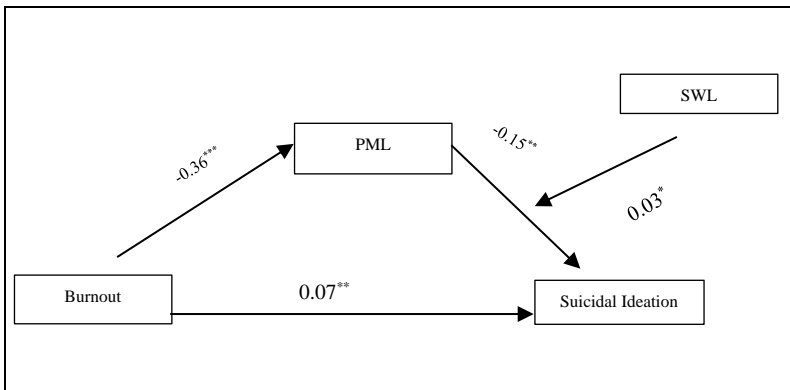
SWL has a significant negative effect in moderated mediation (Index = -0.0137, SE = 0.0079, LLCI = -0.0316, ULCI = -0.0005). In other words, it is seen that the indirect effect of burnout on suicidal ideation through PML is negatively regulated by SWL. Considering the indirect effect of low, moderate and high values of SWL, it is significant at low (b=0.0343, 95% CI= 0.0129 / 0.0627) and moderate (b=0.0219, 95% CI= 0.0069 / 0.0411) levels, but it loses its significance at high levels (b=0.0093, 95% CI= -0.0094 / 0.0301) (Table 4).

**Table 4.** Summary of analysis of conditional indirect effect

SWL	$\beta$	SE	95% CI
			LLCI / ULCI
Low (-1SD)	0.0343	0.0127	0.0129 / 0.0627
Moderate	0.0219	0.0088	0.0069 / 0.0411
High (+1 SD)	0.0095	0.0099	-0.0094 / 0.0301

### Discussion

This study aims to explore the complex effects of the meaning of life and life satisfaction on the relationship between occupational burnout and suicidal thoughts among physicians in Türkiye. Since there are relatively few studies related to the meaning of life and suicidal tendency in the literature on physicians, the most significant contribution of this study to the literature is that it partially explains why occupational burnout reduces suicidal tendencies along with the meaning of life. No other study was found in the literature where the meaning of life played an mediation role in the impact of occupational burnout on suicidal tendencies (Figure 3).



**Figure 3.** The final model Note. N=214 \*p<.05, \*\*p<.01, \*\*\*p < .001

In the study, the hypothesis that H1 has a mediating role in the relationship between burnout and suicidal tendencies is supported. Meaning of life is an essential factor in the workplace context (Ward and King, 2017). Steger et al. (2006) found that experiencing the meaning of life leads to satisfaction and feelings of fulfillment spreading across different aspects of life, and that those who feel their lives are meaningful are less depressed and feel more satisfaction both in their work and life. A higher sense of meaning in life has been associated with higher well-being, higher self-realization, and less occupational burnout (Steger and Kashdan, 2007).



In this study, the meaning of life played a mediating role between occupational burnout and suicidal tendencies. These findings are consistent with previous studies indicating that an increased sense of meaning in life reduces suicidal ideation (Guo et al., 2023; Lew et al., 2020; Liu et al. 2019; Tan et al. 2018). Moreover, various situations in the workplace context, such as workplace bullying (Henry et al. 2014), can reduce the meaning of life, leading to suicidal ideation. In their study, Liu et al. (2021) examined the meaning of life as a mediator between abusive supervision and suicidal ideation. The results showed that the meaning of life mediated and managed the relationship between abusive supervision and suicidal ideation. Another study showed a significant relationship between burnout and lack of personal accomplishment, which is a sub-dimension of suicidal ideation. This suggests that the lack of meaning derived from one's job is a significant aspect of burnout, especially when considering suicidal ideation (Deep et al., 2018). These findings qualitatively support the findings of the current study.

In the study, the hypothesis that life satisfaction has a conditional indirect effect on the relationship between H2 burnout and suicidal ideation is supported. It has been observed that life satisfaction has a moderating role in the relationship between the meaning of life and suicidal ideation. It has been determined that the effect of meaning in life on suicidal ideation is higher in those with low life satisfaction compared to those with high life satisfaction. Our research results are consistent with the literature, which demonstrates a positive relationship between life satisfaction and meaning of life (Bonebright et al., 2000; Park et al., 2010 Steger et al., 2006; Zika and Chamberlain, 1992).

Meaning in life is an important variable for life satisfaction. In a study conducted with 82 participants on the meaning of life and life satisfaction over 13 months, it was found that meaning moderately and consistently influenced life satisfaction (Steger and Kashdan, 2007). Doing things that people find meaningful contributes to the improvement of both psychological and physical health and increases life satisfaction in individuals. As a result, in individuals; the risk of experiencing anxiety, depression and psychological stresses decreases. In addition to the individual benefits, it also has many organizational advantages (Arisoy and Taş, 2021). Thus, it is believed that this could lead to a decrease in suicidal ideation.

Numerous studies have found a significantly negative association between life satisfaction and suicidal ideation (Heisel and Flett, 2004; Johal and Sharma, 2016; Karataş et al., 2021). A longitudinal study conducted over 7 years with 1,904 young individuals demonstrated that life satisfaction serves as a buffer against suicide risk in the face of depressive symptoms (Yu et al., 2021). A study focusing on Chinese university students during the recurring waves of the COVID-19 pandemic revealed that depression played a partial mediating role between life satisfaction and suicidal ideation. Life satisfaction not only directly affected suicidal ideation, but also indirectly influenced it through the mediating effect of university students' depression (Yu et al., 2022). Lower levels of life satisfaction can promote the occurrence and development of suicidal ideation; it may even encourage the individual to engage in suicidal behaviors, which becomes a critical determinant of suicide probability (You et al., 2014).

In a study involving 566 undergraduate students, negative affect and life satisfaction were identified as significant mediators in the relationship between negative life events and suicidal ideation (Yang, 2021). Another study with 622 physicians demonstrated that life satisfaction played a crucial role as a moderator in reducing work-family conflict and

suicidal ideation levels among physicians (Akram et al., 2022). In conclusion, suicidal ideation and life satisfaction are significant areas of concern due to their impact on both physicians and the quality of health care services (Shanafelt et al., 2012).

## Limits

This study has several limitations. Firstly, the small sample size restricts the generalizability of the results. Secondly, the cross-sectional nature of the study also limits its scope. Conducting the study at a time when physicians suicides are on the spotlight could be considered a limitation as it may impact the data. Another limitation of this study is that the data were collected within a single, unique national culture. This could raise some doubts about the universal generalizability of the results. Therefore, repeating the study with physicians from different countries would enhance the reliability of the obtained results.

## Conclusion

This study examined the complex effect of life meaning and life satisfaction on the relationship between burnout and suicidal ideation among physicians in Türkiye. There is a mediation between the meaning of life, burnout and suicidal ideation. More importantly, life satisfaction in this relationship positively affects the mediation of the meaning of life between burnout and suicidal ideation. Additionally, life satisfaction affects both conditionally and indirectly. Ultimately, the meaning of life and life satisfaction seem to mitigate the negative effects of burnout on suicidal ideation. Therefore, studies on the meaning of life and life satisfaction among physicians experiencing burnout in Türkiye serve as protective factors against suicidal ideation.

<b>Peer-Review</b>	Double anonymized - Two External
<b>Ethical Statement</b>	<i>It is declared that scientific and ethical principles have been followed while carrying out and writing this study and that all the sources used have been properly cited.</i> * (Bingöl University Rectorate, Social and Human Science and Ethics Committee Decision was taken with the decision dated 23.10.2023, numbered E.126553 of the Presidency of the Publication Ethics Committee.)
<b>Plagiarism Checks</b>	Yes - Ithenticate
<b>Conflicts of Interest</b>	The author(s) has no conflict of interest to declare.
<b>Complaints</b>	<a href="mailto:itobiad@itobiad.com">itobiad@itobiad.com</a>
<b>Grant Support</b>	The author(s) acknowledge that they received no external funding in support of this research.
<b>Author Contributions</b>	Design of Study: 1. Author (%50), 2. Author (%50) Data Acquisition: 1. Author (%50), 2. Author (%50) Data Analysis: 1. Author (%50), 2. Author (%50) Writing up: 1. Author (%50), 2. Author (%50) Submission and Revision: 1. Author (%50), 2. Author (%50)
<b>Değerlendirme</b>	İki Dış Hakem / Çift Taraflı Körleme
<b>Etik Beyan</b>	<i>Bu çalışmanın hazırlanma sürecinde bilimsel ve etik ilkelere uyulduğu ve yararlanılan tüm çalışmaların kaynakçada belirtildiği beyan olunur.</i> *(Bingöl Üniversitesi Üniversitesi Rektörlüğü, Sosyal ve Beşeri Bilimler ve Yayın Etiği Kurulu Başkanlığının 23.10.2023 Tarih , E.126553 Nolu kararı ile Etik Kurul Kararı alınmıştır.)
<b>Benzerlik Taraması</b>	Yapıldı – Ithenticate
<b>Etik Bildirim</b>	<a href="mailto:itobiad@itobiad.com">itobiad@itobiad.com</a>
<b>Çıkar Çatışması</b>	Çıkar çatışması beyan edilmemiştir.
<b>Finansman</b>	Bu araştırmayı desteklemek için dış fon kullanılmamıştır.
<b>Yazar Katkıları</b>	Çalışmanın Tasarlanması: 1. Yazar (%50), 2. Yazar (%50) Veri Toplanması: 1. Yazar (%50), 2. Yazar (%50) Veri Analizi: 1. Yazar (%50), 2. Yazar (%30) Makalenin Yazımı: 1. Yazar (%50), 2. Yazar (%50), Makale Gönderimi ve Revizyonu: 1. Yazar (%50), 2. Yazar (%50),

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