





# The Prediction of Suicide Ideation Based on Perceived Social Support, Personality Traits, and Meaning of Life in Medical Students during COVID-19 Pandemic: A Cross-Sectional Study

Mohamad Saberi-Hamedani<sup>1</sup>, Parastoo Amiri<sup>2</sup>, Aliasghar Keramatnia<sup>3</sup>,  
Mohammad Amin Shahrbafl, [Reza Shekarriz-Foumani](#)<sup>4</sup>

1 School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

2 Assistant Professor, Iranian Research Center on Healthy Aging, Sabzevar University of Medical Sciences, Sabzevar, Iran

3 Department of Community Medicine, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

4 Department of Community medicine, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

*Corresponding Author:* Reza Shekarriz-Foumani; *Department of Community medicine, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran*

*Email:* [r.shekarriz@sbmu.ac.ir](mailto:r.shekarriz@sbmu.ac.ir)

## Quantitative Study

### Abstract

**Background:** After the global pandemic of coronavirus disease 2019 (COVID-19), many medical schools moved to online classrooms, resulting in lower social interactions and higher psychological issues among medical students, which can be associated with suicide ideation. This study aimed to predict suicide ideation based on perceived social support, personality traits, and meaning of life in medical students.

**Methods:** This prospective, cross-sectional study was conducted on medical students of Shahid Beheshti University of Medical Sciences, Tehran, Iran, from 2021 to 2022. Based on the convenience sampling method, suicide ideation was assessed using the last Persian-translated valid questionnaires, including the Beck Scale for Suicidal Ideation (BSSI), the Multidimensional Scale of Perceived Social Support (MSPSS), the revised form of the NEO Personality Inventory (NEO-PI-R), and Meaning in Life Questionnaire (MLQ). The data were collected by filling out the checklist through a social media-based questionnaire and analyzed through the Pearson correlation coefficient and multivariate regression analysis by SPSS software.

**Results:** 385 medical students [184 men with a mean  $\pm$  standard deviation (SD) of age of:  $27.9 \pm 5.5$ ] were included in the final analysis. The results showed a significant correlation between social support, personality traits, and meaning of life in medical students with suicide ideation ( $P < 0.01$ ). Regression analyses also revealed a difference between social support, personality traits, and meaning in life ( $P < 0.05$ ) which was more prominent in the neuroticism trait ( $\beta = 0.74$ ).

**Conclusion:** Perceived social support, personality traits, and meaning in life can predict the suicide ideation of medical students during the COVID-19 pandemic.

**Keywords:** Suicide ideation; Social support; Personality traits

**Citation:** Saberi-Hamedani M, Amiri P, Keramatinia A, Shahrbafe MA, Shekarriz-Fomani R. **The Prediction of Suicide Ideation Based on Perceived Social Support, Personality Traits, and Meaning of Life in Medical Students during COVID-19 Pandemic: A Cross-Sectional Study.** *Int J Body Mind Culture* 2023; 10(3): 272-81.

Received: 13 Feb. 2023

Accepted: 28 June 2023

## **Introduction**

Coronavirus disease 2019 (COVID-19) started in Wuhan, China, in December 2019 and spread over other countries causing a global pandemic (Shahrbaf, Tabary, & Khareshi, 2021). The pandemic situation caused quarantine for communities (Shahrbaf, Hassan, & Vosough, 2022), and due to several limitations, medical schools moved to online education which caused lower social interactions and psychological issues among students (Chu & Li, 2022). This decrease in social interactivity and increase in psychological problems gave rise to suicide ideation among medical students (Yamazaki, Kizuki, & Fujiwara, 2022). Besides, amongst a large population with a high probability of suicide ideation, such as medical students, it is more visible and problematic (Brailovskaia, Teismann, Lewitzka, Gao, Zhang, & Margraf, 2022). As the pandemic spread and COVID-19 caused local epidemics in Iran (Shahrbaf, Nasr, & Langroudi, 2022), medical schools moved over to online classes, reducing social interactions and increasing psychological complications (Saddik et al., 2020), which in turn increased the probability of suicide ideation.

Suicidal behavior consists of a range of behaviors, including suicidal thoughts, suicide planning, and suicide attempts, which all begin with suicide ideation, pointing towards ideas of deliberate taking of one's own life in people who have wishes or plans of self-destruction but have had no apparent recent (Turecki et al., 2019). A suicide plan is a planned-out instruction to end one's life, while a suicide attempt is a hidden self-injury aimed to end one's life, and completed suicide points at one's attempt to deliberately end one's life that leads to death (Goni Sarries, Blanco Beregana, Azcarate Jimenez, Peinado Jaro, & Lopez Goni, 2018).

Suicide ideation is a risk factor for suicide and refers to any self-destructive thoughts which cover a range of vague thoughts about the end of one's life and suicide (Belete, Kassew, Demilew, & Amare, 2021). Suicide ideation is verbal and nonverbal expressions, as warning signs of a clinical psychological emergency and people who experience suicide ideation run a higher risk of suicide attempts than those who do not (Boudreaux et al., 2018).

Based on previous research, education is a stressful experience, and the stress could be exacerbated within special populations such as university students whose place of study includes a clinical environment, with physical and psychological consequences (Coentre & Gois, 2018). In addition, it is suggested that anxiety and depression, which can be seen in medical students, can be associated with suicide ideation (Seo, Yang, Kim, & Yoon, 2022). Perceived social support is an important factor in reducing suicide ideation (Otten et al., 2022). Furthermore, it was observed that personality traits such as neuroticism, extroversion, openness, agreeableness, and conscientiousness play a major role in the prediction of suicide ideation (Na et al., 2020). The meaning of life as a psychological construct is an important factor in an individual's life and protects them from the harshness of life (Dezutter, Casalin, Wachholtz, Luyckx, Hekking, & Vandewiele, 2013). A recent study demonstrated that a higher meaning of life was associated with lower suicide ideation and the state of happiness in different people affected their mental health (Lutzman & Sommerfeld, 2021; Sadeghi et al., 2019). In the present study, we aimed to evaluate the effect of perceived social support, personality traits, and meaning of life in association with suicidal behavior in Iranian medical students during COVID-19 pandemic. Gaining knowledge in this context can help us to better manage suicidal ideation among medical students during lockdown situation such as COVID-19 pandemic.

## Methods

**Study design:** This prospective, cross-sectional study was conducted on the population of medical students of Shahid Beheshti University of Medical Sciences, Tehran, Iran, from 2021 to 2022. According to the Cochran's formula (Pourhoseingholi, Vahedi, & Rahimzadeh, 2013), considering an  $\alpha = 0.05$  rate, the target group was estimated to consist of 385 students. We administered a convenience sampling method and given the quarantine and lockdown situation in the study period, an online checklist was designed using the Google Forms platform for data collection. Our checklist was shared through a link on the student's social media handles, such as Instagram, WhatsApp, and Telegram. Informed consent was the basis of all data collection and incomplete questionnaires or deliberate refusal to answer the questions was considered as aborting the research. This study was conducted after obtaining permission from the ethical committee of Shahid Beheshti University of Medical Sciences. Informed consent was received from the participants and we respected the confidentiality of collected data and the privacy of the participants. This study had no possible harm to the participants. The registration number of this study in the ethical committee was IR.SBMU.MSP.REC.1400.754.

### Checklist information

Our designed checklist consists of the valid Persian translation of four different questionnaires:

**Beck Scale for Suicidal Ideation (BSSI):** This scale consists of 19 questions on a three-point scale from zero (least severe) to three (most severe). Each item has three choices: the first choice is given zero points, the second one point, and the third is given two points. The total score is calculated as the sum of all question points, from 0 to 38 totals. The higher total score is associated with more suicidal thoughts. The reliability and validity of the BSSI in the English language have been frequently reviewed and almost always the Cronbach's alpha coefficient was higher than 0.85, and its scores had proper correlations with the scores of depression, hopelessness, anxiety, history of suicide attempt, and the suicide attempt in the future (Esfahani, Hashemi, & Alavi, 2015).

**Multidimensional Scale of Perceived Social Support (MSPSS):** This scale consists of 12 questions and three sub-scales of support received from family, friends, and others. The grading is based on a 5-point Likert scale, where strong disagreement gains one point, disagreement gains two, neutral opinion gains three, agreement gains four, and strong agreement gains five. The internal consistency of the scale was good, with a Cronbach's alpha of 0.91 for the SG and 0.87 for the PG. After a four-week retest for reliability exercise, the intraclass correlation coefficient (ICC) was found to be 0.84 (Bagherian-Sararoudi, Hajian, Ehsan, Sarafraz, & Zimet, 2013).

**Revised NEO Personality Inventory (NEO-PI-R):** This questionnaire includes 60 questions regarding neuroticism, extroversion, openness, agreeableness, and conscientiousness, based on a 5-point Likert scale where complete agreement is given five points, an agreement is given four, neutrality three, disagreement two, and complete disagreement is given one point. For the NEO-PI-R, the test manual provides good support for both reliability and validity. Internal consistency coefficients were calculated at 0.86 to 0.95 for both the forms (self and observer). While only three of the subtests had good long-term test-retest reliability (neuroticism, extraversion, openness to experience), all of them had high short-term test-retest reliability. The authors and others give evidence for construct, convergent, and divergent validity (Joshani, Daemi, Bakhshi, Nazemi, & Ghafari, 2010).

*Meaning in Life Questionnaire (MLQ)*: A 10-item questionnaire was designed to measure two dimensions of meaning in life: (1) presence of meaning (MLQ-P) (how much respondents feel their lives have meaning) and (2) search for meaning (MLQ-S) (how much respondents strive to find meaning and understanding in their lives). Respondents answer each item on a 7-point Likert-type scale ranging from 1 (absolutely true) to 7 (absolutely untrue). In the normative sample, both subscales had Cronbach's alpha values between 0.82 and 0.88 and one-month test-retest stability of 0.70 (MLQ-P) and 0.73 (MLQ-S) (Naghiyae, Bahmani, & Asgari, 2020).

Data were entered into SPSS software (version 24, IBM Corporation, Armonk, NY, USA) for data analysis. Before starting the analysis and to ensure the normal distribution of variables, we performed the Kolmogorov-Smirnov test. Qualitative variables are reported as percentages and quantitative variables are reported as mean and standard deviation (SD). Pearson correlation test and multivariate regression were used to analyze data.

**Results**

Three hundred and eighty-five samples (n = 385) were included in the final analysis. The mean age of the participant was 27.96 ± 5.54 and 184 (47.8%) of them were men. Among them, 262 (68.2%) were non-married. In table 1, we presented the general characteristics of the study samples based on the study variables.

The results of the Pearson correlation test are presented in table 2.

As can be seen in table 2, suicide ideation was significantly correlated with all study variables; therefore, we conducted a multivariate regression analysis to further investigate. In the multivariate regression analysis, social support, personality traits, and meaning in life were prognostic factors for suicide ideation.

The results of table 3 show that the strongest variable among these was neuroticism, with a coefficient of 0.740.

**Discussion**

This study was conducted to predict suicide ideation based on social support, personality traits, and meaningfulness of life amongst medical students during the COVID-19 pandemic. Our results demonstrated a significant correlation between these variables and suicide ideation, which was associated with previous studies (Lew, Chistopolskaya, Osman, Huen, Abu Talib, & Leung, 2020).

**Table 1.** The mean and standard deviation (SD) of study variables in samples

Variables		Mean ± SD
BSSI	Suicide ideation	4.92 ± 3.20
MSPSS	Familial support	9.75 ± 4.70
	Friendship support	9.42 ± 3.28
	Others support	9.85 ± 3.46
	Total support	29.02 ± 10.50
	NEO-PI-R	Neuroticism
	Extroversion	24.99 ± 11.14
	Openness	26.07 ± 11.10
	Agreeableness	25.71 ± 10.61
	Conscientiousness	27.40 ± 11.65
MLQ	Search for meaning	23.01 ± 6.11
	Presence of meaning	25.43 ± 7.37

BSSI: Beck Scale for Suicidal Ideation; MSPSS: Multidimensional Scale of Perceived Social Support; NEO-PI-R: Revised NEO Personality Inventory; MLQ: Meaning in Life Questionnaire; SD: Standard deviation

**Table 2.** The Pearson correlation between study variables and suicide ideation (Part I)

Variables/correlation	1	2	3	4	5	6
1-Suicide ideation	1					
2-Familial support	*0.800-	1				
3-Friendship support	*0.528-	*0.742-	1			
4-Others support	*0.453-	*0.676-	*0.798	1		
5-Total support	*0.673-	*0.703	*0.741	*0.713	1	
6-Neuroticism	*0.778	*0.697-	*0.528-	*0.402-	*0.610-	1
7-Extroversion	*0.700-	*0.699	*0.474	*0.382	*0.588	*0.798-
8-Openness	*0.677-	*0.678	*0.743	*0.372	*0.575	*0.793-
9-Agreeableness	*0.574-	*0.657	*0.466	*0.396	*0.571	*0.710-
10-Conscientiousness	*0.568-	*0.637	*0.485	*0.410	*0.572	*0.734-
11-Search for meaning	*0.590-	*0.588	*0.472	*0.413	*0.547	*0.579-
12-Presecece of meaning	*0.561-	*0.566	*0.448	*0.413	*0.530	*0.332-

**Table 2.** The Pearson correlation between study variables and suicide ideation (Part II)

	7	8	9	10	11	12
1-Suicide ideation						
2-Familial support						
3-Friendship support						
4-Others support						
5-Total support						
6-Neuroticism						
7-Extroversion	1					
8-Openness	*0.695	1				
9-Agreeableness	*0.722	*0.799	1			
10-Conscientiousness	*0.721	*0.802	*0.763	1		
11-Search for meaning	*0.518	*0.518	*0.376	*0.364	1	
12-Presecece of meaning	*0.363	*0.350	*0.336	*0.310	*0.717	1

<sup>1</sup>P < 0.01

Perceived social support such as support from family, friends, and valued people in a student’s life plays a crucial role in suicide ideation and attempt prevention (Panesar et al., 2021). Social support may reduce the negative effects of stressful situations in life, so much so that a constant and proper level of social support may minimize the effects of stress on the individual (Pilcher & Bryant, 2016). Support from family, friends, or a professional counselor can greatly assist a person in crisis, and support them emotionally and psychologically resulting in preventing suicidal behavior. Besides, it is suggested that emotional support from friends and acquaintances can increase social interactions (Su & Wang, 2022). Therefore, a higher perceived social support leading to lower suicide ideation appears to be a logical conclusion.

In the assessment of personality traits, we found an association between all personality traits and suicide ideation, which was more prominent in neuroticism.

**Table 3.** Summary of standard coefficients of multivariate regression of suicidal ideation based on social support, personality characteristics, and meaningfulness of life

Variables		β	P-value
Social support	Familial support	-0.497	0.001
	Friendship support	-0.171	0.006
	Others support	-0.018	0.038
Personality traits	Neuroticism	0.740	0.001
	Extroversion	-0.651	0.001
	Openness	-0.297	0.001
	Agreeableness	-0.271	0.042
Meaning in life	Conscientiousness	-0.292	0.012
	Search for meaning	-0.125	0.002
	Presence of meaning	-0.284	0.001

It was observed that people with neurotic personalities were reflective and experienced more negative impulses than others (Kroencke, Geukes, Utesch, Kuper, & Back, 2020). They experience negative emotions such as fear, sadness, nervousness, anger, anxiety, shyness, and guilt and may use suicide ideation as a way to repress anxiety and tensions in their own life (Tao et al., 2022). On the effect of extroversion on suicide ideation, students who have extroversion traits are usually friendly and experience more interactions in the community (Lv, Sun, & Shi, 2022); therefore, as seen in our study, having this trait is negatively associated with suicide ideation. In explanation of openness to experience, those open to new experiences are open to exploring their internal and external experiences and desires and are more curious about the outside world (Tidikis & Dunbar, 2019). This will help students to tackle challenges and difficulties enthusiastically, without being afraid of an alienating experience, as they consider a life challenge a rewarding experience; therefore, as seen in the current study, higher levels of openness trait can be associated with lower suicide ideation, which conflicts with previous result (Na et al., 2020). Agreeableness leads to being more empathetic, humanitarian, and willing to give and receive help (Song & Shi, 2017). Students with agreeableness traits have fewer interpersonal conflicts which may be a result of better behavior toward their peers and are helpful and willing to assist them in the academic environment (Jensen-Campbell, Gleason, Adams, & Malcolm, 2003). Thus, these students can act better at planning their academic life and responsibilities, giving and receiving hope and enthusiasm, and less being engaged in suicidal thoughts and behavior (Soltaninejad, Fathi-Ashtiani, Ahmadi, Mirsharafoddini, Nikmorad, & Pilevarzadeh, 2014). We observed in this study that agreeableness was negatively associated with suicide ideation. In addition, we observed a negative association between conscientiousness and suicide ideation. It was suggested that conscientiousness led to higher consistency in attending to academic tasks and taking on more challenging tasks (Kertechian, 2018). Students with high conscientiousness can handle several goals simultaneously and show higher perseverance in achieving their goals; therefore, as seen in the current study and previous evidence, this trait can negatively associate with suicide ideation (Bluml, Kapusta, Doering, Braehler, Wagner, & Kersting, 2013).

We also assessed the presence of meaning in life in the current study. The meaning in life is negatively associated with depression; therefore, it can prevent psychological tension among students (Seo, Kim, Kim, Kim, Park, & Yoon, 2018). Indeed, attempts to find meaningfulness in life are signs and enthusiastic forces of a healthy mind. According to the present findings, lack of meaning in life can be one of the leading factors in the explanation and prediction of depression, and those suffering from depressive episodes or clinical depression have a much higher chance of suffering from suicide ideation and suicidal thoughts and behavior (Kleftaras & Psarra, 2012). Therefore, it can be concluded that meaning in life can be used to predict suicide ideation among medical students.

This study was associated with some limitations. Our study samples were limited to Shahid Beheshti University of Medical Sciences in Tehran. In addition, the research has been performed online which limits the scope further to those students who had access to the Internet. This research relies on self-reporting and there might have been errors, such as rushed answering, purposefully biased answers, or deliberately wrong answers. Due to ethical restrictions and time restraints of this research, it only relies on the provided questionnaire, and the usage of any other means of data collection was avoided. Despite the shortcomings, the findings appear to have reliable

academic validity and scientific value. The findings of this research can be used in planning and medical intervention such as therapy aimed at the meaningfulness of life and social support in related educational organizations, such as student counseling. It is important to use this research and similar research as a framework to deal with the negative consequences of suicide ideation among students in psychoanalysis and therapy institutions.

## Conclusion

There is a significant association between perceived social support, personality traits, and meaning in life. These variables are capable of predicting suicide ideation among students, especially in special conditions such as quarantine during the COVID-19 pandemic, which caused the limitation of social communication.

## Conflict of Interests

Authors have no conflict of interests.

## Acknowledgments

We would like to express our heartfelt thanks to all of the students of Shahid Beheshti University who participated in this research. Moreover, we would like to thank Shahid Beheshti University of Medical Sciences for financial support.

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