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Psychometric Properties of a Persian Version of the Columbia Suicide Severity Rating Scale (C-SSRS) in Iranian Soldiers

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Abstract

Objective: Suicide is an important health issue nearly all over the world. The Columbia Suicide Severity Rating Scale (C-SSRS) is a well-known instrument for suicide risk assessment. Our purpose in this study is to provide a Persian version of the C-SSRS and evaluate its psychometric properties in the Iranian military population, particularly suicide risk leveling characteristic of the C-SSRS.

Method: For linguistic adaptation, we gathered opinions of an expert panel consisting of 23 professionals in mental health sciences. Furthermore, this version was administered to two groups of soldiers, one representing a sample of normal population (N = 338), while the other group comprised a sample of clinical population from a referral psychiatric hospital (N = 348) in Tehran, capital of Iran, from July 2021 until one year later. Besides the C-SSRS, the Beck Scale for Suicidal Ideation (BSSI), Beck Hopelessness Scale (BSS), and General Health Questionnaire 28 (GHQ28) were obtained from the participants. Correlation coefficients, internal consistency, and factor analysis were evaluated using the Statistical Package for the Social Sciences (version 23) software.

Results: All items of the Persian version of the C-SSRS had acceptable content validity and face validity. This tool demonstrated high correlation coefficients with the BSSI ($r = 0.73$, $P < 0.001$) and BHS ($r = 0.64$, $P < 0.001$), but a low correlation coefficient with the GHQ28 ($r = 0.22$, $P < 0.001$). Specifically, the suicide risk level based on the C-SSRS had a high correlation with both the BSSI and BHS. Also, its internal consistency was satisfactory (Cronbach's alpha = 0.89). Furthermore, factor analysis revealed two factors that is consistent with suicidal ideation and suicidal behavior factors.

Conclusion: Our results indicated acceptable validity and reliability for the Persian version of the C-SSRS, demonstrating its capability to classify suicide risk. It can be concluded that the ordinal suicide risk level (as red, orange, yellow and green) is a valid index for the application of the C-SSRS.

Key words: *Psychometrics; Reproducibility of Results; Suicide; Suicidal Ideation; Suicide Prevention*

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More than 800,000 people die as a result of suicide every year worldwide. The global age-standardized suicide rate was 10.5 per 100,000 population for 2016 (1). Globally, suicide ranks among the top twenty causes of death, especially with a higher prevalence among young people and adolescents, in such a way that suicide is the third leading cause of death among 15-19 year-olds (1). Furthermore, suicide is a noticeable issue in military settings. Some studies in different populations have indicated the high prevalence of suicidal ideation and behavior in military settings (2, 3). Thus, it is of special importance to prepare accurate suicide risk assessment tools and suicide prevention programs for military personnel.

Risk assessment is an important step in suicide prevention strategies. Standard tools for suicide risk assessment enable mental health professionals to identify and monitor at-risk persons (4). Furthermore, it is necessary to introduce instruments for suicide risk assessment in medical settings. Up to now, several tools have been presented for this aim. A recent systematic review revealed that two scales, one of them being the Columbia Suicide Severity Rating Scale (C-SSRS), are the most frequently used suicide assessment tools by mental health professionals (5). Several studies have indicated that the C-SSRS can predict suicide attempts (6-10).

The Columbia Suicide Severity Rating Scale (C-SSRS) is a semi-structured clinical interview that enables interviewers to identify suicidal ideation and behavior in both clinical and research environments (11). One valuable characteristic of this tool is its ability for grading the levels of suicide risk triage (12, 13). Suicide risk levels in the C-SSRS are determined according to one's responses to suicide severity and suicide behavior items. The C-SSRS is based on the Columbia Classification Algorithm of Suicide Assessment (C-CASA) and can provide an accurate description of suicidal ideation and behavior (14). The tool is recognized by the FDA as the standard scale for assessing suicidal ideation and behavior (15). The notable point is that the C-SSRS has been utilized in military settings (16, 17).

The C-SSRS has not been used in the Iranian population to date. In this study, we prepared a Persian version of the C-SSRS and evaluated its psychometric properties, including content validity, face validity, internal consistency, and correlational coefficients, and conducted factor analysis in a sample of Iranian soldiers. Given the necessity of preparing an accurate tool for suicide risk assessment for the Iranian military forces, soldiers were chosen in this study as participants. One of the notable aspects of the "screen version" of the CSSRS is its ability to categorize respondents' levels of suicide risk and to provide triage colors accordingly (13). In our study, in addition to translating the CSSRS into the Persian language, we employed this characteristic in the "lifetime recent" version. Our aim was to evaluate the psychometric properties of the Persian version, along with its suicide risk level (triage level) assessment in a military setting.

Materials and Methods

Linguistic Adaptation

In order to ensure linguistic validity, the C-SSRS was translated into Persian by two independent groups: one by the Lighthouse Project at Columbia University and the other by our research team. After merging these two versions by a third person, a preliminary version was prepared. This version was back-translated to confirm translation accuracy. Subsequently, after correcting mismatched items, the second version was prepared. This version was given to an expert panel consisting of 23 professionals in mental health, each of whom provided feedbacks to refine the final version.

To qualitatively evaluate the content validity and face validity, the final version was assessed by an expert panel. Moreover, based on feedbacks from a group of soldiers in the pilot study, including 36 persons, this version was revised. One of the main goals in this study was to evaluate the risk level of the C-SSRS, which was determined according to Table 1.

Participants

In the next step, to evaluate the tool, we administered the translated version to a group of 686 soldiers. The minimum sample size was determined as 384 based on the Cochran formula, in which N was the sample size, Z was 1.96, d (margin of error) was 0.05, and P was assumed to be 0.5. We recruited two groups of participants. The first group, representing the normal population, consisted of soldiers from an army barracks (n = 338), while the other group included soldiers referred to a psychiatry hospital affiliated to the Iran army, serving as the clinical population (N = 348). Sampling was done using the consecutive sampling method. Persons who did not consent to participate in this study were excluded. The average age of participants was 23.26 (±3.95) and all of them were soldiers of the Iran army, so they all were male.

Measures

Columbia Suicide Severity Rating Scale (CSSRS): The CSSRS is a well-known instrument to assess suicidal ideation and behavior. It has been evaluated in several studies, demonstrating its reliability and validity (10, 11). The ability of this scale to predict suicidal behavior has been shown in a variety of studies (7, 10, 18). The scale has four sections, including severity of suicide ideation (1-wish to be dead, 2-nonspecific active suicidal thoughts, 3-suicidal thoughts with methods, 4-suicidal intent without plan, 5-suicidal intent with specific plan), intensity of suicide ideation (frequency, duration, controllability, deterrents and reasons for ideation), suicidal behavior, and lethality. Additionally, the C-SSRS classifies suicidal behaviors according to the

Columbia Classification Algorithm of Suicide Assessment (C-CASA), thereby reducing ambiguity in the terminology of suicide (14). Data from the primary study showed that the convergent and divergent validity, predictive validity, sensitivity, specificity, sensitivity to change, and internal consistency of the C-SSRS are at a desirable level (11, 19, 20). Also, the C-SSRS can be used as an electronic assessment tool (21-23).

Table1. Role of Each Item in Columbia Suicide Severity Rating Scale (C-SSRS) Suicide Risk Determination if the Response of Item was Positive

	Items	Recent	Lifetime
Severity of suicidal ideation	Wish to be dead		
	Non-specific Active Suicidal Thoughts		
	Active Suicidal Ideation with any methods (not plan) without intent to act		
	Active Suicidal Ideation with some intent to act, without specific plan		
	Active Suicidal Ideation with specific plan and intent		
Intensity of suicidal ideation	Frequency		
	Duration		
	Controllability		
	Deterrents		
	Reasons		
Suicidal behavior	Actual Attempt		
	Interrupted Attempt		
	Aborted Attempt		
	Preparatory Acts or Behavior		
Lethality	Actual Lethality/Medical Damage		
	Potential Lethality		

* For items related to suicidal ideation, the recent period refers to the last month, and for items related to suicidal behavior, it refers to the last three months.

General Health Questionnaire 28 (GHQ28): This tool is a self-report instrument for screening psychological disorders. It consists of 28 questions divided into four items: somatic symptom (1-7), anxiety-insomnia (8-14), social dysfunction (15-21), severe depression (22-28). Four of the questions are allocated to suicide issues (24).

Beck Helplessness Scale (BHS): The BHS is composed of 20 true/false questions that aims to assess three subscales including negative attitude toward the future, loss of motivation, negative expectations. The BHS evaluates hopelessness, which is associated with suicide risk (25).

Beck Scale for Suicidal Ideation (BSSI): This self-report instrument has 19 items that evaluates the presence and intensity of suicidal thoughts in the last week. The first 5 items are screening questions, with each item having ordinal scoring from 0 to 2 (26).

Procedure

The CSSRS was administered to participants by a trained psychologist. Besides the CSSRS, participants were evaluated using the Beck Scale for Suicidal Ideation and Beck Hopelessness Inventory. Moreover, data from the GHQ28 were collected from the normal group, but not from the clinical sample. Additionally, data for these demographic variables were collected from participants: age, marital status, and education level. In this study, all participants were male. A small percentage of soldiers (less than 1.5%) did not answer some demographic questions, including education level, age, and marital status. There was no statistically significant difference in the CSSRS scores between the group who completed their demographic profile and those who did not. The skewness index for all subscales was estimated to be less than 0.09, and the kurtosis index was less than 0.2, both of which did not show a significant deviation from the normal distribution.

Statistical Analysis

Data analysis was done using the Statistical Package for the Social Sciences (SPSS) software version 23. Content validity was assessed quantitatively using content validity ratio, content validity index, and impact score. Pearson correlation coefficient was employed to estimate the correlation of the CSSRS with other instruments. Cronbach's alpha coefficient and split-half method based on the Spearman-Brown coefficient were utilized for internal consistency. Pearson correlation coefficient was also applied to estimate test-retest reliability index. Factor analysis was conducted to verify the construct of the CSSRS. In this regard, Kaiser-Meyer-Olkin and Bartlett's sphericity tests were used to determine data adequacy. The principle component method based on correlation matrix and the varimax method for rotation were employed for factor extraction. Demographic characteristics are presented by descriptive tables and graphs.

Ethical Consideration

Informed consent was obtained from participants, and for illiterate participants, consent was obtained from their guardians. This study has been approved by the Research Ethics Committee in Aja University of Medical Sciences (Approval ID: IR.AJAUMS.REC.1399.274). All methods were carried out in accordance with the Ethical Guidelines for Medical Research. Permission from the creator team of the CSSRS in the Lighthouse Project was obtained for using the instrument in the Iranian population.

Results

Demographic Data

Demographic data of participants are shown in Table 2. All the participants were male and their ages ranged from 18 to 45.

Table 2. Demographic Characteristics of Participants in both Groups of Study (Clinical Population and Normal Population)

		Number	Percent
Age Mean: 23.26 SD:3.95	18-22	337	49.9
	22-26	209	30.9
	26-30	97	14.1
	> 30	32	4.7
	Missing data	11	
Marriage	Single	580	85.5
	Married	94	13.9
	Separated	4	0.6
	Missing data	8	
Education	Illiterate	2	0.3
	Primary	20	2.9
	Middle school	144	21.2
	Diploma	264	38.9
	Associate degree	40	5.9
	BA	172	25.4
	MS	35	5.2
	PhD	1	0.1
	Missing data	8	

Validity

After providing the final version, it was given to an expert panel for quantitative evaluation of validity. This panel included 23 mental health professionals. In order to assess the content validity, item necessity was examined using a three-point rating scale to evaluate the content validity ratio (CVR). Also, item design, including relevance, clarity and simplicity was evaluated by content validity index (CVI) using a four-point rating scale model. CVR should be between − 1.0 and 1.0. The

closer the CVR to 1.0, the more essential the item is considered to be. In this study, the content evaluation panel was composed of 23 experts, and based on Lawshe table (27), a minimum CVR of 0.42 is required. For all items, this cutoff point was surpassed. Additionally, the mean content validity index (CVI) was 0.93 and content validity ratio was 0.77.

In the quantitative evaluation of face validity, we calculated the impact score (frequency × importance). Those items with an impact score equal or greater than 0.42 (according to the number of panelists) were considered appropriate. In our study, this score for all items exceeded 3, which indicates satisfactory face validity (Table 3).

Table 3. Content and Face Validity of each Item of Columbia Suicide Severity Rating Scale (C-SSRS) Based on Expert Panel Opinion

	CVI	CVR	Impact score
Wish to be dead	0.97	0.82	3.83
Non-specific Active Suicidal Thoughts	0.89	0.91	3.70
Active Suicidal Ideation with any methods (not plan) without intent to act	0.89	0.91	3.74
Active Suicidal Ideation with some intent to act, without specific plan	0.91	0.73	3.57
Active Suicidal Ideation with specific plan and intent	1.00	0.82	3.83
Frequency	1.00	0.90	3.86
Duration	0.90	0.43	3.55
Controllability	0.83	0.60	3.62
Deterrents	0.92	0.60	3.86
Reasons	0.90	0.81	3.55
Actual Attempt	0.94	1.00	3.91
Interrupted Attempt	0.86	0.62	3.50
Aborted Attempt	0.90	0.62	3.64
Preparatory Acts or Behavior	1.00	0.81	3.86
Actual Lethality/Medical Damage	0.95	0.90	3.71
Potential Lethality	0.93	0.80	3.86
Mean	0.93	0.77	

As previously mentioned, to evaluate the correlation of the Persian version of the C-SSRS with other instruments, participants completed the BSSI, BHS and GHQ9 questionnaires.

Based on the triage level of the Persian version of the C-SSRS, the majority of our sample (%70.9) was classified in the green category. Also, 39 (%5.7) and 67 participants (%9.5) was categorized as low and moderate suicide risk, respectively. Finally, 93 persons (%13.6) in our study had high suicide risk. Details of these data are provided in Table 4. A noteworthy point is the significant association of suicide risk and lower education level in our sample (P = 0.001).

Table 4. Frequency of Each Triage Level among Demographic Categories

		No risk	Low risk	Moderate risk	High risk	Chi square	P value
Age	18-22	69.0	4.8	9.5	16.7	10.46	0.315
	22-26	72.2	5.3	10.5	12.0		
	26-30	72.2	9.3	8.2	10.3		
	> 30	75	9.4	12.5	3.1		

		No risk	Low risk	Moderate risk	High risk	Chi square	P value
Marriage status	Single	71.7	5.7	9.3	13.3	5.12	0.528
	Married	70.2	6.4	10.6	12.8		
	separated	50.0	0.0	0.0	50.0		
Education level	Primary	63.6	4.5	9.1	22.7	48.77	**0.001**
	Middle	57.6	4.9	16.7	22.8		
	Diploma	68.8	5.7	8.0	17.5		
	Associate degree	77.5	5.0	10.0	7.5		
	BA	83.1	4.7	8.1	4.1		
	MS	80.0	14.3	2.9	2.9		
Total		487	39	67	93		

Table 5. Correlation of Columbia Suicide Severity Rating Scale (C-SSRS) with Beck Suicide Inventory, Beck Hopelessness Scale and General Health Questionnaire 9

	Subscales	Severity of suicidal ideation	Intensity of suicidal ideation	Suicidal behavior	lethality	Triage level
Beck Scale for Suicidal Ideation (BSSI)	Desire for death	0.73	0.74	0.46	0.53	0.73
	Preparation for suicide	0.75	0.79	0.48	0.55	0.80
	Actual suicide desire	0.75	0.78	0.49	0.58	0.77
	Total score	0.78	0.81	0.49	0.57	0.73
Beck Hopelessness Scale (BHS)	Negative attitude toward future	0.57	0.60	0.36	0.41	0.61
	Loss of motivation	0.61	0.63	0.48	0.41	0.62
	Negative expectation	0.52	0.53	0.36	0.39	0.60
	Total score	0.63	0.65	0.45	0.45	0.64
GHQ28	Somatic symptoms	0.31	0.20	0.17	0.12	0.24
	Anxiety and insomnia	0.24	0.15	0.16	0.18	0.22
	Social dysfunction	0.24	0.10	0.14	0.07	0.17
	Severe depression	0.23	0.21	0.11	0.23	0.29
	Total score	0.25	0.19	0.08	0.15	0.22

To establish criterion validity, the correlation between the C-SSRS and Beck Suicide Inventory was investigated. The results showed an acceptable correlation coefficient, especially for suicide ideation and triage level. Additionally, in order to evaluate the convergent validity, the correlation between the Beck Hopelessness Scale and General Health Questionnaire 28 (GHQ28) was determined (Table 5). In this regard, it is important to assess the correlation between the ordinal scale of suicide risk (triage level) and these tools. As it can be seen in Table 5, the suicide risk level had an excellent correlation with the Beck Scale for Suicidal Ideation (BSSI).

Furthermore, for the evaluation of the instrument's validity, we conducted factor analysis. In our study, sampling adequacy was estimated by the Kaiser-Meyer-Olkin (KMO) test and its value was 0.937, indicating the sample's appropriateness for factor analysis. In addition, we performed Bartlett's test of Sphericity to confirm that variables are correlated together and factor analysis could be performed on these data ($\chi 2 = 10612.254$, $P = 0.001$). There were two eigenvalues that are greater than 1, indicating that the questions of the C-SSRS can be categorized into two groups. The first factor consists of questions related to suicidal ideation and the second factor is associated to suicidal behavior (Table 6).

60.021% of the existing variance is explained by the first factor and 7.750% by the second factor, and a total of 67.722% of the variance is explained by the questionnaire.

Table 6. Matrix of Columbia Suicide Severity Rating Scale (C-SSRS) Items for Extracted Factors in Factor Analysis

	Factor 1	Factor2
Frequency	0.911	
Duration	0.902	
Reasons	0.898	
Controllability	0.893	
Non-specific Active Suicidal Thoughts	0.852	
Wish to be dead	0.848	
Deterrents	0.842	
Active Suicidal Ideation with any methods (not plan) without intent to act	0.785	
Active Suicidal Ideation with some intent to act, without specific plan	0.741	
Active Suicidal Ideation with specific plan and intent	0.702	
Lethality		0.431
Interrupted Attempt		0.691
Preparatory Acts or Behavior		0.580
Aborted Attempt		0.575
Actual Attempt		0.564
Non-Suicidal Self-Injurious Behavior		0.554

Reliability

An important item in assessment of reliability is internal consistency. In this regard, we calculated Cronbach's alpha coefficient. Additionally, we split the data of the C-SSRS into two halves and evaluated the Cronbach's alpha for each group. We employed the Spearman-Brown formula to determine the consistency between these two groups (Table 7). Table 8 indicates the consistency of each item of the test.

Table 7. Evaluation of Internal Consistency

	Cronbach's alpha	Spearman-Brown formula	First half alpha	Second half alpha
Life time	0.81	0.62	0.92	0.68
Recent	0.91	0.77	0.96	0.69
Total	0.89	0.61	0.96	0.67

Test-retest reliability: Despite suicide being a dynamic phenomenon that can vary across time (28), we assessed test-retest reliability with a three-month interval. The results indicate a retest coefficient of 0.85.

Table 8. Internal Consistency of the Persian Version of the Columbia Suicide Severity Rating Scale (C-SSRS)

	Mean (±SD)		Item total correlation		Alpha if item deleted	
	recent	Life time	recent	Life time	recent	Life time
Wish to be dead	0.25 (±0.43)	0.32 (±0.47)	0.71	0.65	0.89	0.89

	Mean (±SD)		Item total correlation		Alpha if item deleted	
	recent	Life time	recent	Life time	recent	Life time
Non-specific Active Suicidal Thoughts	018 (±0.39)	0.24 (±0.43)	0.72	0.73	0.89	0.89
Active Suicidal Ideation with any methods (not plan) without intent to act	0.09(±0.29)	0.11(±0.32)	0.60	0.64	0.89	0.89
Active Suicidal Ideation with some intent to act, without specific plan	0.15(±0.36)	0.20 (±0.40)	0.72	0.76	0.89	0.89
Active Suicidal Ideation with specific plan and intent	0.13 (±0.33)	0.17 (±0.38)	0.73	0.74	0.89	0.89
Frequency	0.64 (±1.35)	0.69 (±1.31)	0.76	0.74	0.88	0.88
Duration	0.64 (±1.35)	0.70 (±1.31)	0.76	0.73	0.88	0.88
Controllability	0.63 (±1.37)	0.67 (±1.30)	0.73	0.73	0.88	0.88
Deterrents	0.36 (±0.97)	0.35 (±0.90)	0.61	0.61	0.88	0.88
Reasons	0.74 (±1.59)	0.83 (±1.61)	0.74	0.72	0.88	0.88
Actual Attempt	0.18 (±0.85)	0.43 (±1.96)	0.45	0.54	0.89	0.88
Non-Suicidal Self-Injurious Behavior	0.08 (±0.27)	0.15 (±0.35)	0.53	0.60	0.89	0.89
Interrupted Attempt	0.12 (±0.87)	0.37 (±3.99)	0.37	0.43	0.89	0.91
Aborted Attempt	0.05 (±0.37)	0.23 (±3.84)	0.24	0.35	0.89	0.91
Preparatory Acts or Behavior	0.09 (±0.39)	0.15 (±0.52)	0.50	0.52	0.89	0.89
Actual Lethality/Medical Damage		0.27 (±0.79)		0.65		0.89

Discussion

The Columbia Suicide Severity Rating Scale (C-SSRS) is used as a suicide assessment tool across a myriad of languages (9, 29-31). This tool comprehensively assesses suicide risk, raising clinicians' awareness about different aspects including suicide ideation, intensity of thoughts, suicidal behaviors, lethality of past attempts, and the lifetime suicide risk. Thus, this assessment tool helps clinicians to make better decisions about appropriate interventions for each individual (11).

We translated the C-SSRS into Persian and assessed the content and face validity of the translated version. Furthermore, we evaluated other psychometric properties among a sample with 686 participants from the military population, comprising one group of soldiers being in a barracks and another group of soldiers referred to a psychiatric hospital. Our data revealed that the CSSRS has a good correlation with other tools that estimate suicide and suicide related factors including the Beck Suicide Inventory and Beck Hopelessness Scale, but showed unsatisfactory correlation with the GHQ28. In Posner *et al*.'s study, the correlation coefficient (r) between the original version of the C-SSRS and BDI was 0.80 (11), while in our study, this parameter for the Persian version was 0.78. Also, Cronbach's alpha estimates for the CSSRS indicate significantly good internal consistency. All of the aforementioned parameters indicate that the Persian version of the C-SSRS demonstrates strong reliability and validity.

In exploratory factor analysis, we yielded two factors, with all questions being correlated with one of them, and these two factors correspond with the subscales of suicidal ideation and suicidal behavior. This finding is consistent with a similar study in Spanish-speaking adolescents (31). However, in another study by Madan *et al*., the extracted factors were different; severity of ideation and behavioral items loaded onto the first factor, while intensity of suicidal ideation was placed into the second factor (32).

One of the key characteristics of the C-SSRS is its ability to categorize respondents based on suicide risk levels; thus, the medical system can allocate specific care to each person based on their suicide risk levels. This ability is important in triaging patients in a more accurate way and avoiding unnecessary intervention, thereby redirecting resources to those with the greatest need (33). As it was shown in our results, the level of

risk based on the C-SSRS has an acceptable correlation with other suicide assessment instruments, showing its suitability for categorizing suicide risk into four ordinal classes. In line with this finding, a study performed by Bjureberg *et al*. revealed that a score of ≥3 in suicidal ideation severity subscale is associated with a higher likelihood of death by suicide (odds ratio 4, 95% CI 1.3–12.6) in a seven-day follow-up. A Score of ≥3 in this subscale coincide with moderate and high suicide levels (orange and red in color triage levels) (6). In another study, suicidal ideation severity and intensity as well as actual suicide attempts at baseline predict suicidal behavior (34). Except for the suicide ideation intensity, other two factors play a role in determining the suicide triage level. Moreover, another study showed that the first item (wish to be dead) is the only item that is correlated with sever suicide attempts (35). In Chile, it was demonstrated that the suicidal ideation subscale in the self-report version of the CSSRS can provide an accurate classification of suicide idea risk levels (12). In spite of the claims in Posner's and Pumariega's studies (11, 13) about this tool's sensitivity to change, there is a deficit in sensitivity to change of the C-SSRS triage level. This is because even one suicide attempt (including actual, interrupted, aborted or preparatory act) in a lifetime indicates that the patient will have moderate suicide risk forever (orange triage level). In addition, considering the fact that in many cases the suicide attempt is unplanned, the CSSRS may not be sufficiently capable of predicting unplanned attempts (18). Therefore, the C-SSRS can predict planned suicide attempts with more precision.

Our demographic data demonstrate that suicide has a positive correlation with individuals' poor levels of education. This finding is consistent with previous studies (36-38). However, in contrast, several studies have revealed that there is a direct relationship between suicide rate and education level (39).

Limitation

We validated the scale specifically among male soldiers. The result may be different if validated in other populations and genders. As this study was performed cross-sectionally, we did not evaluate predictive validity of this instrument for suicidal behavior. For future studies, we suggest using the C-SSRS in civilian populations, especially in medical or psychiatry emergency departments.

Conclusion

Based on our results in this study, the Persian version of the C-SSRS and its triage level is a reliable and valid instrument for the assessment of suicide risk in military settings. Compared with other suicide risk assessment tools, this Persian version of the C-SSRS demonstrates accuracy and also there is acceptable internal consistency between its items. The accuracy of the suicide risk levels of this tool is convincing for implementing a suicide prevention program to improve the appropriateness of interventions for each person.

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Conflict of Interest

None.

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