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The effect of motivational interviewing-based training on the rate of using mental health services and intensity of suicidal ideation in individuals with suicide attempt admitted to the emergency department

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Abstract:

BACKGROUND AND OBJECTIVE: Unless mental health care is provided to suicide attempters after discharge from the emergency department, suicide prevention opportunities may be lost. The purpose of this study was to determine the effect of motivational interviewing (MI)-based training on using mental health services and reducing the severity of suicidal thoughts.

METHODS: This quasi-experimental study was performed on seventy suicide attempters who had been admitted to the emergency department of three university hospitals in Southeast Iran in 2019. Eligible patients were chosen through convenience sampling, and they were randomly divided into the experimental ($n = 35$) and control ($n = 35$) groups. The intervention group received three MI sessions on the day of discharge and the 1st week after discharge. Twelve weeks after the intervention, the Beck Scale for Suicidal Ideation and the using mental health services were completed in both the groups. Data were analyzed using Chi-squared test, independent t -test, and paired t -test.

RESULTS: While there was no significant difference between the two groups in terms of the mean score of suicidal ideation on the pretest, the experimental group experienced a significant decrease in this respect at the end of the study; thus, this group scored 8.86 ± 5.30 , which is considerably lower than that obtained in the control group (15.85 ± 6.65) ($P = 0.0001$). Furthermore, at the end of the study, the rate of using mental health services increased much more in the experimental group than in the control group ($P = 0.01$).

CONCLUSION: MI training had a significant positive impact on mitigating suicidal ideation and promoting mental health services use. To improve mental health and to better serve suicidal individuals, it is recommended that short-term interventions be developed in the form of post-discharge education for suicidal patients admitted to the emergency department.

Keywords:

Emergency department, mental health, motivational interviewing, suicidal ideation, suicide attempt

Introduction

As one of the most important psychosocial challenges and a major public health problem in the world, suicide is on the rise as social interactions are becoming ever

more complex.^[1] It is one of the ten leading causes of death. Results from the 2017 National Survey on Drug Use and Health found that nearly 10 million adults reported suicidal thoughts, 1.3 million reported a

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suicide attempt, and approximately 800,000 people die by suicide every year.^[2,3] Like the rest of the world, suicide rates in Iran show an increasing trend, with an average of 8–9 deaths/100,000. If we add suspicious deaths that are not reported officially due to social, cultural, and religious reasons, the existing rates will soar dramatically.^[4]

Suicide-related behaviors have a wide range. One of the predictors of death by suicide has a history of such an attempt. Suicide attempt history may predict subsequent attempts, and recurrent suicidal attempts comprise a risk factor for suicidal deaths; thus, 50% of those who have died by suicide had a history of at least one suicidal attempt.^[5-7] Suicide and repeated suicide attempts raise the cost of healthcare systems, increase years of life lost, impede productivity, and impose a high – especially emotional – burden on the family.^[2]

The alarming rise in the prevalence of suicide-related behaviors and their social, economic, and psychological consequences has led the World Health Organization to introduce suicide control as part of its public health program.^[8] Suicide prevention programs for high-risk individuals, training health-care providers, upgrading and supporting crisis hotlines, enhancing mental health services, and providing favorable conditions for suicide attempt survivors are among the most notable programs.^[9]

Several studies have been carried out to reduce suicidal thoughts and behaviors. More notable reports in this area include: the effect of integrating care after a suicide attempt into the health-care system on the severity of suicidal ideation;^[10] impact of the new mental health services on rates of suicide and hospitalizations;^[11] the effect of cognitive behavioral group therapy and family training on suicide components;^[12] the effectiveness of problem-solving skills training on suicidal ideation in soldiers;^[13] the effect of preventive nursing measures on subsequent suicidal attempts;^[14] and the effect of telephone follow-up on repeated suicide attempt in patients discharged from an emergency psychiatry department.^[2] Most of previous studies have not considered motivation and promoting active participation in the treatment process of suicide attempters. After discharge, suicidal patients may continue to be ambivalent, ignore recommendations, and even express anger at imposing restrictions on their access to hazardous equipment. On the other hand, based on the internal suicide debate hypothesis, suicide attempters, due to their ambivalence, are constantly weighing the reasons for surviving and dying. The severity of the ratio of death-to-life desire is an important determinant of future suicidal behaviors.^[15] Resolving this ambivalence by strengthening motivation for survival is crucial and raises the likelihood of

participation and persistence in educational programs.^[16] There are different ways to increase motivation and participation in treatment; nevertheless, as most suicide attempters in Iran are admitted to the emergency department, there is a shortage of time and resources needed for complex and specialized treatments such as cognitive behavioral therapies.

Motivational interviewing (MI) is one of the short-term educational and counseling approaches to resolving ambivalence and increasing patient's motivation and participation in treatments, including cognitive behavioral therapy and postdischarge care.^[17] MI is a client-centered approach and a guide to reinforcing intrinsic motivation for change through discovering and overcoming the roots of anxiety and depression.^[18] The serious ambivalence of suicidal patients to live or die partly explains why MI could be an effective method in modifying suicidal behaviors. According to the empirical evidence, 36% of those who attempted suicide were happy to have survived the attempt, while 42% maintained their ambivalence afterward.^[19]

In Iran, once they are rescued and their physical condition is stabilized, most suicide attempters are discharged from the emergency department without any referral to psychiatric treatment, counseling, or follow-up. Patients' return to home and society without receiving psychological therapies not only does not reduce their psychological distress but also exacerbates interpersonal, psychological, and social problems because of the burden of suicide. The adherence rate of suicidal patients to their recommended care or referral after discharge is extremely low. Consequently, much of the effectiveness of suicide prevention programs should be focused on developing interventions, care, and training that are based on patients' acceptance and adherence.^[7,20] Considering the importance of access and acceptance of postdischarge care and evidence-based support for MI in different domains of health behavior change, this study aimed at investigating the impact of training based on MI on using mental health services and alleviating the severity of suicidal thoughts.

Methods

This quasi-experimental study was conducted on seventy suicide attempters admitted to the emergency department of three teaching hospitals in Southeast Iran in 2019. The patients were recruited during hospital stay and were followed up after discharge.

The eligibility criteria were age over 18 years, minimum reading and writing literacy, living in the city and having accessibility for follow-up, no mental retardation, no self-reported of taking psychotropic drugs, psychosis

or hospitalization due to psychiatric disorders, stability of the patient's condition, fully consciousness, lack of communication problems, acknowledging a deliberate suicidal attempt by the patients or a family member, and no previous suicide attempt. On the other hand, lack of cooperation to continue attending, failure to attend at least one training session, and lack of willingness to answer questionnaires at posttest constituted the exclusion criteria.

The sample size was estimated for each group ($n = 35$) based on the mean and standard deviation of suicidal ideation reported by Zemestani *et al.*, 95% confidence interval, statistical test power of 80%, and the following formula.^[12]

$$n = \frac{(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta})^2 (S_1^2 + S_2^2)}{(\bar{X}_1 - \bar{X}_2)^2} = 33 / 82$$

$$Z_{1-\frac{\alpha}{2}} = 1 / 96 \quad S_1 = 12 / 8 \quad \bar{X}_1 = 9 / 8$$

$$Z_{1-\beta} = 0 / 85 \quad S_2 = 6 / 8 \quad \bar{X}_2 = 16 / 8$$

Data were collected using a questionnaire that consisted of three parts. The first part included personal information such as age, gender, education, marital status, occupation, economic status, ethnicity, and family support system. The second part covered information on the type and amount of mental health services used, such as presenting to a psychiatrist, psychologist, or counselor, psychiatric hospital, social emergency department, or social work center along with their frequency. This part was completed based on the patients' self-report. The third part consisted of the 19-item Beck Suicidal Scale Ideation.

The BSSI is a self-report questionnaire designed to detect and measure the severity of suicidal attitudes and ideation. It measures items such as wish to die, active and passive suicidal tendencies, duration and frequency of suicidal thoughts, self-control, deterrent factors, and readiness to suicide. This instrument has four questions and is scored on a 3-point Likert scale (0 = never; 1 = somewhat; and 2 = very much). Based on the sum of scores, the total score of Beck Suicidal Scale Ideation varies from 0 to 38, with higher scores representing higher severities of suicidal thoughts. In Iran, Anisi *et al.* reported the validity and reliability of this questionnaire. The BSSI is highly correlated with standardized clinical trials and suicidal tendencies.^[21] Specifically, its correlation coefficient has been 0.90 for inpatients and 0.94 for outpatients. It also features a high reliability. Thus, the overall reliability of this instrument

as obtained by Cronbach's alpha is 0.97. In the present study, the reliability of BSSI based on the Cronbach's alpha was 0.91.

After receiving a letter of introduction from the Vice-Chancellor for Research and Information Technology of Zahedan University of Medical Sciences, we attended the research environment and met the hospital president, the head of the emergency department, as well as the nurses in charge at each work shift to make necessary coordination in conducting the study. To perform further investigation and sampling, we were informed in case the disease was caused by poisoning or an accident that raised the possibility of suicide.

First, necessary information was gathered from the subjects or their family members to ensure the occurrence of suicide attempt by the researchers verify. The informed consent was acquired from all participants after confirming their suicide attempt, alertness, and stability of their physical condition, as well as providing information about the process and objectives of the study. A total of 78 eligible individuals were examined, of which 8 individuals (7 due to not meeting inclusion criteria and 1 due to decline to participate) were excluded from the study. As a result, the study was conducted and followed up on 70 individuals [Figure 1]. Individuals meeting the inclusion criteria were recruited through convenience sampling. Next, they were randomized to the experimental and control groups. Before sampling, seventy blue and red balls, corresponding to the control and experimental groups, were prepared. Each individual was then asked to randomly pick one ball, which determined his/her group. As patients gradually referred to the emergency department of the selected hospitals, eligible individuals were identified and assigned to their respective group. First, the demographic questionnaire and the Beck Suicidal Scale Ideation were completed by patients in both the groups. If the individual had been assigned to the experimental group, prior to discharge, the first introductory session was held for him/her at a specified room in the emergency department. After the phone number and address of the patient were obtained, an agreement was reached to run the next two sessions of individual intervention at the nearest health center. One week after discharge, the two MI sessions – each lasting 90–100 min – were held with a 3-day interval based on Table 1. The educational sessions were presented individually by a trained psychiatric nursing assistant and supervised by an expert with PhD in counseling (with research and clinical background in MI as corresponding author).

After the intervention, in addition to provide safety planning, patients and their families were given information on mental health services such as psychiatric

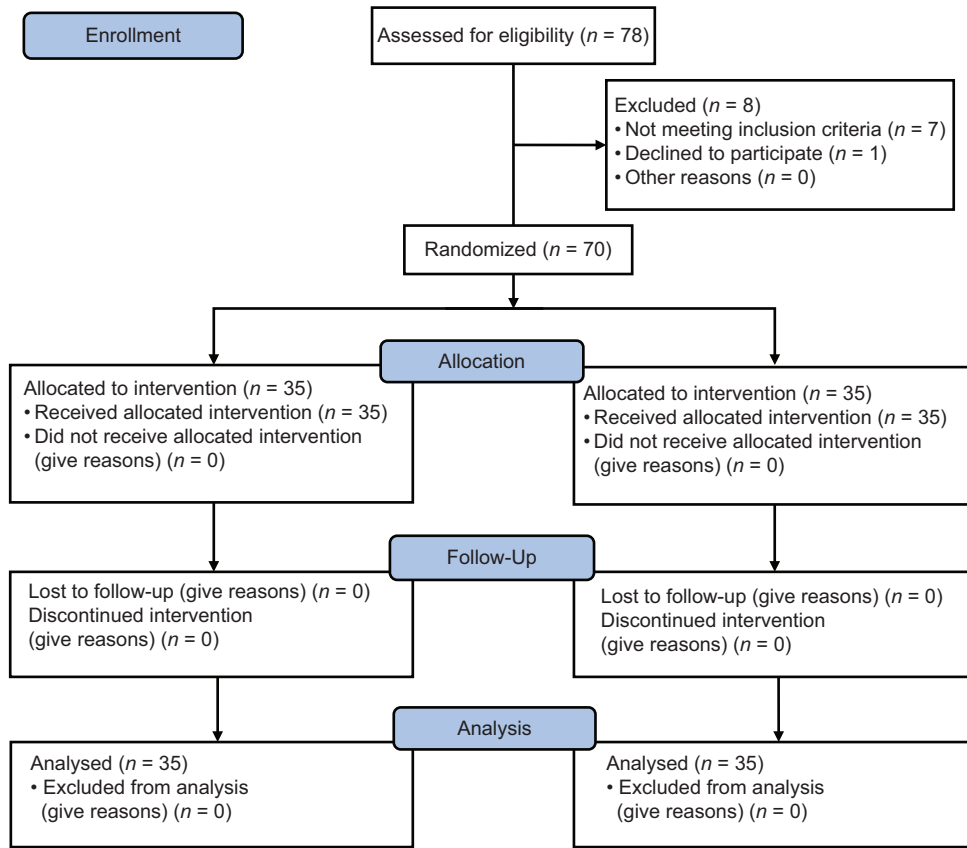


Figure 1: Flowchart of participants through each stage of randomized clinical trial

Table 1: Structure and content of sessions (motivational interviewing -based suicide prevention training)

Session	Educational content
First	Orientation: Reviewing suicidal behaviors, risk factors, protective factors (MI; practice the effect of suicidal attempt on different dimensions of life, and decisional balance practice)
Second	Identifying ambivalence and discussing the reasons and desires to die and live, coping strategies for stress and suicidal ideation, (MI; practicing identifying values and develop discrepancy to evocating of intrinsic motivation)
Third	Coping with suicidal ideation, safety planning, and limiting access to hazardous devices (MI; support self-efficacy as well as reinforcing beliefs about one's adequacy and ability to change, recognize tempting situations, and control behavior in those conditions)

MI=Motivational interviewing

hospitals, counseling clinics, and psychiatrists' offices. A psychiatrist and a counselor were arranged to visit free of charge patients who did not have a satisfactory financial status. Twelve weeks post intervention, the patients in the intervention group completed the BSSI and the questionnaire containing information on mental health services. Patients in the control group did not receive the instructions given to the other group after the pretest; nevertheless, they were notified about safety planning at the end of the study.

After reviewing interventional studies and related clinical trials, including Britton *et al.*, 2016; Britton *et al.*, 2011; Czyz *et al.*, 2019; Holt *et al.*, 2017; Reinauer *et al.*, 2018; Hoy *et al.*, 2016, and Navidian *et al.*, 2017, we drafted the content of the sessions.^[16,17,19,22-25] Moreover, we sought the expert opinion of relevant faculty members such as psychiatrists, psychiatric nurses, counselors, and clinical psychologists to reinforce the scientific validity of the materials. After summarizing and applying these comments, we prepared the final format of MI-based suicide prevention training.

After being collected and coded, the data were analyzed using IBM Version 21.0. Initially, frequency, percentage, mean, standard deviation, and minimum and maximum values were determined by descriptive statistics. Paired *t*-test was used to compare pre- and postintervention means. Independent *t*-test was later used to compare mean scores between the two groups. The significance level in this study was considered to be 0.05.

This study was approved by the Ethics Committee of Zahedan University of Medical Sciences (IR.ZAUMS.REC.1398.165). Providing information on the research process and scheduling as well as the type of intervention, obtaining written informed consent, ensuring confidentiality of what happens in the sessions,

and the freedom to withdraw from the study at any stage were among ethical considerations observed in this study.

Results

The mean and standard deviation of patients' age in the intervention and control groups were 26.85 ± 7.68 and 26.53 ± 7.13 , respectively. Thus, there was no statistically significant difference between the two groups in this regard ($P = 0.8$). Other demographic information of the study subjects is presented in Table 2. The results showed no statistically significant difference between the two groups in terms of demographic variables ($P < 0.05$).

The results concerning the effect of MI-based training on suicidal ideation severity [Table 3] show that the mean score of patients' suicidal thoughts in the experimental group decreased from 21.93 ± 6.45 before the intervention to 8.86 ± 5.30 after the intervention. In the control group, this score changed from 19.91 ± 6.80 before

the intervention to 15.85 ± 6.65 after the intervention. The results of independent t -test indicated that although the two groups had no statistically significant difference in terms of suicidal ideation severity before the intervention ($P = 0.33$), the mean score of suicidal ideation severity after the intervention was significantly lower in the experimental group ($P = 0.0001$). The result of analysis of covariance test with controlling the effect of pretest [Table 4] indicated that the mean score of the suicidal ideation severity in the two groups had a statistically significant difference after the education based on motivational interview ($P = 0.0001$).

After receiving MI training, 88.58% of the experimental group had referred to a psychiatrist, psychologist, or counselor for at least one session, while just 45.72% of the control group had referred to these specialists, suggesting a significant variation between the two groups ($P = 0.01$). Furthermore, 12 weeks after the intervention, 22.85% ($n = 8$) of the control group, compared with 2.85% ($n = 1$) of the experimental group,

Table 2: Comparison of demographic characteristics of the intervention and control groups

Variable	Intervention, n (%)	Control, n (%)	P (Chi-square test)
Gender			
Female	17 (48.6)	16 (45.7)	0.78
Male	18 (51.4)	19 (54.3)	
Total	35 (100)	35 (100)	
Occupation			
Employed	12 (34.3)	10 (28.6)	0.45
Unemployed	23 (65.71)	25 (71.4)	
Total	35 (100)	35 (100)	
Education			
Below high school diploma	9 (25.8)	10 (28.6)	0.07
High school diploma	13 (37.1)	13 (37.1)	
Above high school diploma	13 (37.1)	12 (34.3)	
Total	35 (100)	35 (100)	
Marriage			
Married	14 (40)	15 (42.9)	0.66
Single	21 (60)	20 (57.1)	
Total	35 (100)	35 (100)	
Economy			
Poor (<\$ 300)	9 (25.7)	11 (31.4)	0.47
Moderate (\$ 300-600)	26 (74.3)	24 (68.6)	
Total	35 (100)	35 (100)	

Variable	Intervention, Mean \pm SD	Control, Mean \pm SD	P (independent t-test)
Age (year)	26.85 \pm 7.68	26.53 \pm 7.13	0.8

SD=Standard deviation

Table 3: Comparison of the mean and standard deviation of severity of suicidal thoughts score before and after education based on motivational interview in intervention and control group

Group	Time (Mean \pm SD)			Paired t-test (before-after), P
	Before	After	Changes	
Intervention	21.93 \pm 6.45	8.86 \pm 5.30	-13.06 \pm 6.39	0.0001
Control	19.91 \pm 6.80	15.85 \pm 6.65	-4.05 \pm 3.22	0.07
Independent t-test, P	0.33	0.0001	0.0001	

SD=Standard deviation

Table 4: The results of analysis of covariance test on the score of suicidal ideation severity after education based on the motivational interviewing by adjusted the pretest effect

Source of change	SS	df	MS	F	Significance	η	Power
Pretest	29.60	1	29.60	0.82	0.36	0.01	0.14
Group	3361.95	1	3361.95	93.67	0.0001	0.58	1
Error	2404.56	67	35.88				
Total	14,171	70					

SS=Sum of square, MS=Mean of square

attempted suicide again. In this regard, Fisher's exact test revealed a statistically significant difference between the two groups ($P = 0.0001$).

Discussion

The findings of the present study demonstrated that MI training could have a significant, positive impact on reducing suicidal ideation of attempters admitted to the emergency department. Britton *et al.* examined the effect of one to two sessions of MI on suicidal thoughts of soldiers. In line with our results, they noted that MI, accepted by a large number of participants, led to a significant reduction in suicidal ideation; besides, 73% of the subjects entered the treatment process after a 2-month follow-up.^[26] This study had been conducted on people admitted to a psychiatric hospital where they used to refer for receiving mental health service. In the present study, however, the subjects did not have a history of referring to a psychiatrist or psychiatric hospital. Confirming this result, Desai *et al.* reported that 71% of the patients who had received MI entered the treatment process early. As a result, the likelihood of suicide dropped considerably.^[27] On the other hand, the results of a systematic review on the impact of short-term psychological interventions on suicide showed that some studies have not observed a significant decline in the severity of suicidal ideation. In addition, it has been reported that suicide attempters have immense psychological distresses, and the interventions implemented so far have largely mitigated suicidal behaviors – rather than suicidal ideation – through promoting knowledge and understanding of the suicide crisis, safety planning for future crises, and follow-up calls to monitor and support patients.^[28] Part of the effectiveness of the intervention in our study could be attributed to the principle of self-efficacy promotion in MI. In this regard, Shim and Compton reported that their suicide prevention educational program boosted awareness and self-efficacy of patients in controlling suicidal thoughts immediately after training.^[29]

Another part of our findings exhibited that suicidal attempters who had received MI were more inclined to refer to specialists for mental health services than those

in the control group. The first priority in the emergency department for suicidal patients is to provide them with medical care and to evaluate the severity of their suicidal attempt and the second priority is to assess their need for adequate post-discharge care and referral.^[7] Suicidal attempters in general emergency departments are less likely to refer using psychiatric services than to those that in psychiatric emergency departments. Meanwhile, adherence to treatment and follow-up recommendations is quite low in these patients in general emergency departments.^[30] In addition to routine care, Cedereke *et al.* made two supportive and motivational telephone calls to their subjects to encourage participation in treatment and its persistence, and they noted an improvement in suicidal attempters' compliance with treatment.^[31] Indeed, one of the goals of MI is to raise adherence to treatment recommendations and to persuade patients to undergo arduous therapies.^[18,20]

In this regard, Grupp-Phelan *et al.*, applied MI to promote the referral rate and usage of outpatient mental health services in adolescent suicide attempters admitted to non-psychiatric emergency department. While there was no statistically significant difference in using mental health services at 2-month follow-up, the MI group began receiving most psychiatric treatments and regularly attending therapeutic sessions at 6-month follow-up.^[32] The reason the intervention did not produce the desired outcome after 2 months, unlike what happened in the present study, could be that – as the parents of these adolescents stated – many participants were unable to access mental health services because of logistical barriers, scheduling problems, and long waiting lists. Conversely, in the present study, arrangements were made for participants willing to use mental health services to refer to a psychiatrist or counselor. This facilitated access (eliminating potential barriers to present) might explain the rise in the extent to which our subjects, as opposed to those of other similar studies, began using health services in the short term. King *et al.*, showed that students taking part in an online MI-based counseling program were significantly more likely to seek help, talk to friends and family, and refer to mental health specialists as compared to before the intervention.^[33] Lack of using mental health services due to its stigmatization, lack of awareness of effective treatments on the part of patients as well as families, conflict between family members, lack of access to mental health services,^[30] logistical problems, and long waiting times^[31] are some of the obstacles to accessing mental health services by suicidal attempters. If some training and interventions, including MI, manage to address these barriers through establishing appropriate communications, people will be more interested in reaching out to mental health professionals. Concerning the integration of MI in the treatment programs designed for suicidal patients,

Kress and Hoffman argued that although those who attempt suicide need directive counseling to ensure their personal safety, similar to patients with mental disorders, they too benefit from more directive, structured, and active treatment programs that are coupled with MI principles.^[34]

The findings of the present study indicate that in addition to decreasing the severity of suicidal ideation and encouraging more frequent referral for mental health services, MI was associated with reducing the rate of subsequent suicide attempts. The systematic review by Inagaki *et al.* illustrated that active communication and follow-up interventions for suicidal patients admitted to the emergency department could prevent subsequent suicide attempts during the 6-month, high-risk, post-discharge period.^[35] Exploring the effectiveness of post-discharge educational interventions, Exbrayat *et al.* concluded that providing suicidal patients with three telephone follow-up sessions within 60 days after discharge could prevent more suicide attempts.^[2] McCabe *et al.* proposed that many suicidal patients are referred to the non-psychiatric emergency department, and 20% of these individuals may attempt suicide again within 1 year and be re-admitted to an emergency department where mental health services are not available. They proposed that short-term psychological care could be effective in reducing subsequent suicidal attempts.^[28] Based on the study by Zerler, establishing a positive therapeutic relationship to detect the ambivalence of suicidal patients and empowering them to participate in care programs after receiving MI are two major principles of safety planning, life-saving treatments, and reducing suicide attempts in these patients.^[36]

Suicide may be seen by some as a solution but a hopeless one. It may be a passive way of seeking help. Meanwhile, one may increase the likelihood of access to care and medical advice through developing positive communications and an interactive context. The three main communication skills stressed in MI, namely asking, listening, and informing, can facilitate and support change when a guiding style, rather than a directive style, is adopted. In guidance-oriented MI, while discussing possible options (including suicide), the therapist presents various solutions (such as seeking and receiving mental health care) along with their advantages and disadvantages that have been used in similar conditions. Thus, patients are implicitly informed that the therapist is there to help them solve their problem in the way they intend.^[37] Since they respect clients' preferences, adopting structured, flexible, and step-by-step approaches like MI can be effective in preventing suicidal behaviors.

This study addressed only referral or non-referral for mental health services as an outcome of the intervention,

whereas the rate of using services, quality of attending the program, and completion of treatment were not assessed.

The 12-week follow-up was short for the recurrent, serious issue of suicide, and longer follow-ups are needed to be implemented.

If the services provided for the intervention group were also extended to the control group, the rate of referral of the control group would have been positively affected and it would have influenced the results.

Conclusion

Overall, the findings of the present study suggest that MI training has a positive, significant impact on the rate of referral to mental health specialists, alleviating the severity of suicidal ideation, and reducing subsequent suicide attempts. Given the absence of mental health specialists in the emergency department and the lack of availability and evaluation of psychiatric services after discharge, it will be helpful to conduct short-term psychological interventions in these wards. Hence, it is recommended that short-term interventions based on psychological approaches like MI be integrated in post-discharge care programs for suicidal patients. Such evidence-based interventions contribute to preventing subsequent suicidal attempts, encouraging suicidal patients to refer more frequently to mental health professionals, and reducing suicidal thoughts in this high-risk population.

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Conflicts of interest

There are no conflicts of interest.

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