Original Article

Designing and determining the effectiveness of a suicide intervention package for psychologists working in the primary health care system

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Abstract

Aims: Suicide is a major public health problem around the world. The present study aimed to design and determine the effectiveness of a suicide intervention package for psychologists working in the primary health care system in Hormozgan Province. **Materials and Methods:** This study was conducted in two phases: qualitative and quantitative phases. In the qualitative phase, it was a thematic analysis type, and in the quantitative phase, it was quasi-experimental type with pretest–posttest in two groups of intervention and comparison. To standardize the suicide intervention package, Delphi method was used, and for quantitative content validity, content validity index (CVI) and content validity ratio (CVR) were used. In the quantitative phase of the study, the statistical population of the study included 270 people who had suicidal ideations and had no history of suicide attempt. Among them, 135 people were included in the intervention group and 135 people were included in the comparison group using a convenience sampling method. They were selected among those referred to eight comprehensive rural and urban health service centers in eight cities of Hormozgan Province. The results were analyzed by MANCOVA statistical test. **Results:** CVR was more than 0.75 and CVI was more than 0.87. In the quantitative phase, the results showed a significant difference between the means before and after the intervention for the variables of psychological distress, suicidal ideation, and hopelessness ($P < 0.01$). **Conclusion:** It seems that psychological suicide preventive interventions in the primary health care system are effective in reducing psychological distress,suicidal thoughts and hopelessness.

Keywords: Crisis, Delphi, preventive intervention, suicide, thematic analysis

Introduction

Suicide is considered one of the major challenges of the health system around the world.[1] Owing to the increasing trend of suicide,[2-5] which has a significant share in the burden of disease,[6] it poses high costs on the health system of countries.[7-10] Also, it has been shown that brief interventions are effective in preventing suicidal ideations and behaviors by identifying warning signs, coping skills, existing social support, professional assistance and crisis intervention.[11] A study in The SUPER-MISS program showed that brief intervention and contact showed a significant reduction in suicide after 18 months of follow-up compared to normal treatment.[12] Thus, crisis intervention training may play

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a major role in identifying and early intervening in emerging psychosocial crises that are likely to lead to suicidal behavior.[13] Research shows that 83% of people who die by suicide And 50% of people see a primary health care provider instead of a mental health provider within the last 30 days leading up to their suicide.[14] For this reason, crisis-based training for psychologists in the primary health care system seems to be essential more than ever in preventing and early intervening in suicide. In this regard, studies have yielded promising results regarding the effectiveness of brief psychological interventions by primary health care providers.[15-17]

Studies show that suicide attempts with the aim of self-harming are on the rise.[5,18] In this regard, recent studies have focused their attention on suicidal ideation and attempt as two major indicators for measuring and intervening in suicide.[2,19-22] Various studies have reported the prevalence of suicidal ideation at 3%–19% in the general population.[23] A study conducted in Iran revealed that the lifetime prevalence of suicidal ideation, planning, and suicide attempt was 14%, 6.6%, and 4.1%, respectively.[24] Traditionally, studies have referred to the role of psychiatric disorders, especially mood disorders,[9,23-27] addiction, borderline personality disorder, psychiatric illness and its early onset, intensification of suicidal ideation, and directing the person toward suicide.[21,28,29]

However, along with factors such as dysfunctional coping style,[30] depression,[31] and impulsivity,[32] recent studies have referred to hopelessness as the most important psychological factor predicting suicide and extensive studies have been conducted on it.[21,33-37] Also, studies show that psychological distress has a direct and mediating role in the suicide continuum,[38] which can be considered an important and consistent predictor of the next possible suicide attempt in the next year for attempters.[39] Studies have also indicated that psychological distress along with the two indicators of suicidal ideation and suicide attempt is a major risk factor for suicide even in specific populations.[40-42] Considering the fact that psychologists working in the primary health care system along with physicians are at the forefront of dealing with suicidal people, the present study aims at designing an effective package and evaluating its effectiveness in intervening in suicidal ideation in the primary health care system for psychologists.

Methods

The present study was conducted in two phases. In the first phase, the qualitative part is a thematic analysis type. In the second phase, to evaluate the effectiveness of the suicide intervention package, a quasi-experimental study was conducted as a pretest–posttest.

The first study

Based on the first phase of study and after reviewing the existing literature on suicide intervention, Roberts Crisis Intervention Model[43] was selected. Also, to develop a suicide intervention package, 15 experts were interviewed individually. According to the type of study, the statistical population included all suicide specialists (psychologists, psychiatrists, policy makers, key people, and health managers). Among them, the sample group was selected and was invited for intervention session/sessions. Purposeful sampling was used and sampling was continued until data saturation was reached. The data collection method in this phase included semi-in-depth structured interviews. The focus of the interview was on package content with regard to psychological interventions in the primary health care system, structure, number of sessions, and the way of providing services by psychologist. The interviews lasted from 30 min to 70 min.

In order to conduct an interview, the researcher first referred to the workplace and introduced himself and stated the goal of the interview and specified a date for the interview. Then, the interview process provided the conditions for a better and easier interview by asking introductory questions and establishing a proper relationship and gaining the trust of the participants. After the introductory questions, the interview began with a general and open-ended question. For example, participants were asked to express their opinions on a suicide prevention and intervention program. Then, given what was stated and by asking questions that clarified the process, they were guided to cover the goals of the research. Examples of questions at this stage included "In your opinion, what components should a psychologist's intervention include given the structure and goal of the primary health care system or how many intervention sessions can be presented according to the goals and structure of the primary health care system." To analyze the data, the recorded interviews were first typed, and Graneheim and Lundman[44] methods were used to extract the initial codes.

For this purpose, the texts obtained from the interview were read word for word several times to gain a general understanding of the data, and words or phrases that represented the key thoughts or concepts of the data were identified. The codes were named with continuing this process. Then, the codes were transformed into subclasses that were more abstract than the original codes based on the similarities and differences between them. According to the existing relationship, differences, and similarities of the subclasses extracted in the previous stage, they were combined to create the main classes. The four criteria of Guba and Lincoln[45] were used for validation in the qualitative phase. Regarding the credibility, allocation of sufficient time for data collection, sampling with maximum diversity, long-term engagement with phenomena, and review by participants were considered by the researcher. Regarding the dependability, all interviews and extracted codes were reviewed by supervisors and consultants. Regarding the confirmability, while trying not to interfere with his/her assumptions in data collection and analysis, the researcher tried to carefully record and report the research process during the study to allow others to do the study if necessary.

Regarding the transferability, the researcher tried to provide necessary conditions for judging and evaluating others by accurately describing and explaining the research. Finally, based on the results of interviews with experts and review of previous

studies and library reviews, the Suicide Intervention Package was developed based on the Roberts and Ottens (2005) Crisis Intervention Model with seven steps and 22 strategies for psychologists working in the primary health care system. The reason for using this model is to use the step-by-step process of accurate, continuous assessment, and follow-up of the crisis in the form of seven steps.

Delphi method was used for qualitative and quantitative content validity. For this purpose, three Delphi rounds were performed. To obtain qualitative validity, the mentioned package was sent to eight psychologists of the faculty members of the universities via e-mail. The corrections desired by the psychology professors were performed at each stage, and the revised package was sent again to the above-mentioned professors for comment. To achieve the quantitative content validity and to ensure that the most important and correct content (strategy necessity) has been selected, the content validity ratio (CVR) was used, and to ensure that the proposed strategies best represent the package steps, content validity index (CVI) was used. After confirmation of the steps by the supervisor and advisor, the answers were calculated based on the CVR and adapted to the Lawshe table. After determining and calculating the CVR, the CVI was examined based on the CVI of Waltz and Bausell.[46] Ethical principles of the study included the approval of the project in the Research Council of Iran University of Rehabilitation Sciences and Social Health and obtaining the code of ethics of Ir.uswr.rec1398.022, oral and written informed consent of the participants to participate in the study.

The second phase

First, according to the designed package, the knowledge inventory with 24 questions and attitude inventory with 16 questions were designed and content validity of the scales were evaluated qualitatively by experts, and their corrective opinions were applied. Then, to obtain reliability, 60 psychologists were asked to answer the inventory questions and the reliability of the list was calculated by using Cronbach's alpha method. Cronbach's alpha was obtained at 0.83 for the total inventory, and it was obtained at 0.855 and 0.735, respectively, for the knowledge inventory and attitude inventory.

Then, four psychologists assigned to the cities of the intervention group were pretested by the knowledge and attitude inventory. They were trained the suicide intervention package, and then they were retested again by the knowledge and attitude inventory. Also, four psychologists assigned to the comparison group were retrained in one session based on the usual suicide prevention and intervention package of the Ministry of Health. The sampling method was stratified random at first. Accordingly, eight cities with psychologists were ranked in order of population and from two cities, one was randomly assigned to Group A and another to Group B. Then, Group A was randomly named as the intervention group and Group B as the comparison group. A data collection center was selected in each city.

The samples were selected from 324 people who had suicidal thoughts and intention but had no history of attempting suicide and were referred to comprehensive health service centers in the primary health care system. Finally, 135 people were selected for the intervention group and 135 people for the comparison group using a convenience sampling method. Those who had suicidal ideation and were referred to family physicians in a comprehensive health service center were referred by family physicians to a mental health expert (psychologist) located in a comprehensive health service center for intervention. The intervention consisted of three sessions of 50 min crisis intervention based on a package designed for psychologist. Three sessions were considered for this package. The first session was evaluated according to the model [Table 1] from the first step to the sixth step, which is to complete the action plan step and returned to the fourth step, which is the step of reducing pain and suffering. In the second session, risk was assessed and the emphasis was continued on the fourth and fifth steps of the session, and in the third session, while reassessing the risk, a follow-up program was developed and implemented with the help of the clients.

Table 1: Package content validity index: CVR and CVI in the first phase of the study

Steps and strategies	CVI	CVR
Planning and performing crisis assessments		
1-Estimating the psychological strength of clients for fatal self-harm	0.87	1
2-Assess the seriousness of suicidal ideation	1	1
3-Examining specific risk factors	0.87	1
Build the relationship quickly		
4-Stay with clients	1	1
5-Identify and manage your own negative feelings and attitudes toward clients	1	1
6-Normalize thinking, talking about suicide, and the negative emotions related to suicide	0.87	0.75
7-Speak less and use declarative sentences so that the person has the opportunity to talk to you about his or her problem without being confused.	1	1
Recognize the main problems up to sudden crises		
8-Listen, understand, and approve	0.87	1
9-Calm everything down	1	1
10-Create a therapeutic landscape (buying time)	0.87	0.75
11-Categorize problems	1	1
12-Identify the message	1	1
Manage the emotions and feelings of the clients		
13-Encourage emotional discharge	1	0.75
14-Acknowledge psychological pain	1	1
15-Teach tolerating negative emotions	1	1
Discover alternatives		
16-Minimize the power war	1	0.75
17-Develop a problem solving framework	0.87	0.75
18-Apply appropriate social support	1	0.75
19-Bring back hope	1	1
Complete the action plan		
20-Draft a positive short-term action plan	1	1
21-Use a safety plan	1	0.75
Follow-up		
22-Follow up	1	0.75

The comparison group received routine treatment, which included a Ministry of Health suicide intervention package in the primary health care setting. This package is a four-session package that includes suicide risk assessment and security plan, psychological education and patient suffering reduction, suicide management and family education, each of which is presented in one session. Inclusion criteria were no history of suicide, having reading and writing skills, no psychosis, no substance abuse, no specific physical disabilities such as deafness, blindness, and difficulty or disability in speaking, and willingness to participate in the study.

Research tools

Beck Hopelessness Scale (BHS) is a self-report questionnaire consisting of 20 items that measure respondents' degree of pessimism about the future. This scale is answered as true and false and the range of scores is from 0 to 20. Scores between 0 and 3 indicate minimal hopelessness, between 4 and 8 indicate low hopelessness, between 9 and 14 indicate moderate hopelessness, and 15 and above indicate severe hopelessness. In Beck *et al.*'s study, internal consistency of the scale was examined using alpha coefficient (KR-20)[47] and the reliability coefficient was obtained at 0.93. In Iran, a study was conducted on 471 male and female students to standardize BHS using internal consistency coefficient (Cronbach's alpha) and the reliability coefficient was obtained at 0.79, which is acceptable for research purposes.[48]

Beck Scale for Suicide Ideation (BSSI) was developed by Beck in 1979 to measure a person's susceptibility to suicide. It is implemented through semi-structured interviews and provides a numerical estimate of the severity of suicidal ideations. This scale consists of 19 items rated by Ballinger on a three-point scale from zero (minimum severity) to 2 (maximum intensities). The first five articles screen the subject's desire to live or die, thereby reducing the duration of execution in people who do not have a suicidal ideation. Only those who wish to report actively or passively committing suicide are rated in items 6 to 19.

These items are related to duration and frequency of suicide ideation, the desire to die, the sense of control over suicidal aspirations, the design and plan of suicide, the tool and method to commit suicide, internal and external inhibitors, and a history of previous suicide attempts. The validity and reliability of BSSI have been confirmed in various studies.[49] In Iran, a study calculated the reliability of this scale using Cronbach's alpha (0.95) and split-half method (0.75).[50] The Psychological Distress Scale (k-10) is a tool developed by Kessler in 1992 to be used in the general population.[51] Studies have shown that the K-10 questionnaire has good validity and reliability. In a study on multiple sclerosis patients, Shakernegad *et al.*[52] used the 10-item form (K-10) of this scale and reported its Cronbach's alpha at 0.71.

Results

In the first phase, this study was conducted to determine the content validity and evaluate the initial effectiveness of the suicide intervention package for psychologists working in the primary health care system.

Table 2 shows the primary themes, secondary themes, and initial codes extracted from interviewing experts in the first phase of the study.

According to the objectives of the study and the results obtained from Table 2, after identifying the key concepts, the initial codes were extracted from the interviews. First, open coding and then axial coding were performed, which led to the identification of one primary category, four secondary categories and 30 final codes.

Table 1 shows the package CVI: CVR and CVI of the first phase of the study.

According to the results obtained from Table 1, the CVI was calculated using the CVR formula. Accepting items was based on CVR score of 0.75 and above. Based on Lawshe,[16] when the number of members of the panel of experts is 8, the minimum acceptable CVR is equal to 0.75. The CVR results indicated that all strategies were equal to or greater than the Lawshe table index number (0.75), so they were considered appropriate. Also, the content validity of the whole tool using the S-CVI/AVE index was 0.96 and for I-CVI, its mean was 0.87. It was found that according to Polit[17] when the members of the panel of experts are eight people, items with values of 0.75 and above are considered appropriate. It indicated that necessary and important strategies had been used in this tool. Then, the suicide intervention package for psychologists was taught to four psychologists and their pretest and posttest scores were tested using the Attitude and Knowledge Inventory. Paired t-test was used to determine whether the intervention package

Table 2: Primary themes, secondary themes, and initial codes extracted from interviews with experts

Primary category	Secondary category	Final codes
Intervention content	Assessment	Clinical interview, psychiatric interview, diagnosis, taking history, suicide risk assessment, risk assessment, rapid suicide risk assessment, identification of risk and protective factors, crisis severity rating
	Intervention	Crisis intervention/Active role of psychologist/Therapeutic relationship/ Active listening/Empathy/Lack of judgment/Step-by-step intervention/ Emotional discharge/Cognitive reconstruction/Patient psychological education/Induction of hope/Problem solving/Safety plan/Maintaining contact with the patient
	Complementary intervention (follow-up)	Family education/Supervision/Getting family support/Systematic referrals/ Maintaining continuous communication until resolving the crisis/Getting external support/Determining a booster session

training for suicide had changed the knowledge and attitude of psychologists.

Table 3 shows the pre-test and post-test results of psychologists' knowledge and attitude. The results of t-test were also significant and showed that this increase in mean was statistically significant.

In the second phase, this study tried to determine the effectiveness of the suicide intervention package for psychologists working in the primary health care system on psychological distress, suicidal ideation, and hopelessness.

For this purpose, BHS, BSSI, k-10 were distributed, collected, and analyzed. First, the demographic information of the participants was reported. Then, using covariance analysis, the differences between the pretest and posttest variables of psychological distress, hopelessness, and suicidal ideation in the two groups were analyzed and reported.

The present study was conducted on 324 patients, 54 of whom refused to continue receiving the intervention during the intervention. Among 54 people, 38 refused to continue receiving the intervention and 16 received the intervention completely, but after two weeks, the subjects did not return for the post-test and in the phone call, they stated that they were not willing to take posttest. Finally, 270 people completed the intervention, of which 21 (15.6%) were male in the intervention group and 16 (11.9%) were male in the comparison group. Also, 114 females (84.4%) in the intervention group and 119 females (88.1%) in the comparison group were compared.

The present study was conducted on four age groups: 10 to 20 years old, 20 to 30 years old, 31 to 40 years old, and above 40 years old. The results showed that most of the participants (n = 53 or 39.3% in the intervention group and n = 56 or 41.5% in the comparison group) were aged between 20 and 30 years and the lowest number was in the age group of over 40 years (6 (4.4%) in the intervention group and 6 (4.4%) in the comparison group).

The highest frequency of participants in this study in terms of educational status with 64 people and 47.4% were under diploma in the intervention group and 67 people and 49.6% in the comparison group. Also, the lowest frequency of participants in this study in terms of educational status was a master's degree with 1 person or 0.7% in the intervention group and 1 person or 0.7% in the comparison group.

Also, in terms of marital status, 56 (41.5%) were single and 79 (58.5%) were married in the intervention group, and 58 (43%) were single and 77 (57%) were married in the comparison group. In terms of employment status, in the intervention group, 71 (52.6%) were housewives, 31 (22.9%) were employed, 10 (7.4%) were unemployed, 13 (9.6%) were school students, and 10 (7.4%) were university students. In the comparison group, 76 (56.2%) were housewives, 26 (19.2%) were employed, 14 (10.3%) were unemployed, 11 (8.1%) were school students, and 8 (5.9%) were university students.

The results of univariate analysis of covariance to investigate the effect of intervention package training designed for suicide of psychologists on psychological distress are reported in Table 4. The results suggest that the difference between the intervention and control groups in psychological distress (η^2 = 0.337, P = 0.001, $F_{1.267}$ = 135.630) is significant and shows that the intervention package was effective on the intervention group. The ETA statistic for psychological distress was 0.337, which shows that 33% of the changes in psychological distress are due to the suicide intervention package.

Results of univariate analysis of covariance to investigate the effect of suicide intervention package training on suicidal ideation are reported in Table 5. The results indicate that the difference between the two groups of intervention and control in suicidal ideation (η^2 = 0.558, P = 0.001, $F_{1.267}$ = 0.558) is significant and shows that the intervention package on suicide was effective on the intervention group. The ETA statistic for suicidal ideation was 0.558, indicating that 55% of suicidal ideation changes were due to the suicide intervention package.

Results of multivariate analysis of covariance to investigate the effect of intervention package training on hopelessness are reported in Table 6. The results show that the difference between the intervention and control groups in hopelessness (η^2 = 0.031, P = 0.004, $F_{1.267}$ = 8. 666) is significant and shows that the intervention package in suicide was effective in the intervention group. The ETA statistic for hopelessness was 0.031, indicating that 31% of the changes in hopelessness were due to the suicide intervention package.

Discussion

The present study aimed to determine the content validity of the suicide intervention package, designed especially for psychologists working in the primary health care system. For this purpose, based on interviews with experts and a review of existing suicide intervention models, the crisis intervention model of Roberts and Ottens (2005) was selected and developed and its effectiveness in the primary health care system was tested. Comparing the pretest and posttest scores of study participants'

Table 3: Results of paired t-test in pre-test and post-test of psychologists knowledge and attitude

Subscale	MD	SD	SD.E	Upper bound	Lower bound	*t*	df	*P*
Knowledge	4.000-	2.00	1.00	0.818-	7.182-	4.000-	3	0.028
Attitude	17.500-	5.00	2.50	9.544-	25.456-	7.000-	3	0.006

Table 4: Results of univariate analysis of covariance of psychological distress variables

Source of effect	Dependent	SS	df	MS	F	*P*	η^2
Pretest of psychological distress	Posttest of psychological distress	198.1	1	198.1	134.0	715.0	001.0
group	Posttest of psychological distress	691.1211	1	691.1211	630.135	000.0	337.0
Error	Posttest of psychological distress	320.2385	267	934.8			
Total	Posttest of psychological distress	0.00096282	270				

Table 5: Results of univariate analysis of covariance of the suicide ideation variable

Source of effect	dependent	SS	df	MS	F	*P*	η^2
Pretest of suicide ideation	Posttest of suicide ideation	119.0	1	119.0	012.0	912.0	000.0
group	Posttest of suicide ideation	108.3324	1	108.3324	311.337	000.0	558.0
Error	Posttest of suicide ideation	214.2631	267	855.9			
Total	Posttest of suicide ideation	000.135213	270				

Table 6: Results of univariate analysis of covariance of hopelessness variable

Source of effect	Dependent	SS	df	MS	F	*P*	η^2
Pretest of hopelessness	Posttest of hopelessness	0.442	1	0.442	0.324	0.570	0.001
group	Posttest of hopelessness	11.812	1	11.812	8.666	0.004	0.031
Error	Posttest of hopelessness	944.363	267	363.1			
Total	Posttest of hopelessness	000.52879	270				

psychological distress test showed a significant decrease in participants' posttest scores. It means that identification and intervention in suicide crisis is effective in people with suicide ideation, as it reduces the psychological distress in the subjects. Also, a significant difference was observed in the mean pretest and posttest scores of the subjects in the BSSI and BHS which indicates the effectiveness of the intervention package in the suicide crisis.

Conclusion

Studies have indicated that the effect of crisis intervention as an appropriate option compared to traditional long-term treatment models continues to increase.[53] Now, the question is no longer whether crisis intervention or short-term treatment measures are effective, but the question is which methods work best with what kind of clients and with what problem and under what conditions.[54] The World Health Organization has emphasized the crucial role of short intervention in suicide prevention efforts for at least two decades, and SUPRE-MISS has emphasized on the implementation of intensive and short-term interventions to prevent and intervene suicide.[12] In other words, suicidal crises are usually the result of a temporary, reversible, and two-way status, and interventions in clients with suicide ideation are based on the premise that suicide crisis management is not necessarily fatal, if successful.[55] In confirming the previous studies,[56] the present study revealed that intervention in the suicide crisis by psychologists in the primary health care system can play an effective role in reducing the risk of suicide attempt. In explaining this result, it can be stated that placing the clients with suicide ideation in a structured intervention and follow-up of them can help their life. It seems that primary health care settings are appropriate places for identification and effective intervention in the suicide ideation of people.[57] Thus, the presence of psychologists in these centers can be considered an opportunity that can reduce suicide ideation in the people by early identification of these people and putting them in intervention and then a follow-up of them.

Ethical considerations

Adherence to the principles of research ethics.

The present study was approved by the Ethics Committee of the University of Rehabilitation Sciences and Social Health. All study participants completed the informed consent form. In the present study, all subjects were stated that they have a right to withdraw from the study at the any stage and they were ensured that their information and answers would remain confidential.

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The present study was derived from a PhD dissertation of the first author in the area of clinical psychology at the University of Social Welfare and Rehabilitation Sciences and Social Health and did not pose any costs for the participants and the university's financial resources were not spent in this project.

Conflicts of interest

There are no conflicts of interest.

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