Original Article

The Effect of FRIENDS Educational Program on Resilience and Health-related Quality of Life in Adolescents with Hemophilia

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Abstract

Background: Improving resilience and health-related quality of life (HRQOL) is one way to adapt to psychological problems in adolescents with hemophilia. One of the educational programs that can probably be effective in improving these factors is the FRIENDS educational program. This study was conducted with the aim of determining the effect of "FRIENDS" educational program on resilience and quality of life in adolescents with hemophilia. **Materials and Methods:** This clinical trial was conducted on 60 adolescents with hemophilia selected using a convenience sampling method who visited the Comprehensive Hemophilia Center of Ayatollah Dastgheib Hospital, affiliated with Shiraz University of Medical Sciences, Iran, from August to October 2022; they were divided into two groups of intervention and control based on block random allocation. The data were completed before and immediately after the intervention. The interventions were carried out in 10 weekly 1-hour sessions. The collected data were analyzed using Chi-square, independent *t*-test, and paired *t*-test. **Results:** After the intervention, there was a significant difference in the total mean (SD) score of resilience between the intervention group [3.32 (0.14)] and the control group [2.72 (0.14)] ($t_{58} = 31.87$; $p < 0.01$). Furthermore, after the intervention, there was a statistically significant difference ($t_{58} = 20.54$; $p < 0.01$) in the mean (SD) score of HRQOL between the intervention group [3.66 (0.20)] and the control group [2.68 (0.15)]. **Conclusions:** FRIENDS educational program has positive effects on the resilience and HRQOL of adolescents with hemophilia.

Keywords: *Adolescent, health-related quality of life, hemophilia, resilience*

Introduction

Hemophilia is a type of rare clinical disease caused by mutations in genes located on the X chromosome, primarily affecting males.[1] The worldwide estimated number of people diagnosed with hemophilia is 1,125,000, 418,000 of which live with severe hemophilia.[2] The incidence of hemophilia type A is estimated to be 1 in every 5000 male births, and type B is estimated to be 1 in every 50,000 male births.[3] Iran has a high number of patients with hemophilia, with approximately 10,030 reported cases, of which 5271 were diagnosed with hemophilia type A, 1118 with hemophilia type B, and 3641 with an unknown type of hemophilia.[2]

Despite the fact that hemophilia is rare and affects only a small portion of the population, it is often associated with high costs and imposes a high health and economic burden on individuals and society.[4] Moreover, adolescence can be considered as a sensitive stage during which the quality of physical, nutritional, and social environments can alter the paths of health and growth to the next stages of life.[5] Psychologists use the term resilience to describe how some people can withstand and find solutions to mental and physical hardships and problems, which means a person's use of their own strength and their capacity to adapt to difficult and stressful conditions.[6]

The concept of resilience is defined as the ability to achieve and maintain an acceptable standard of wellbeing, even in the face of incidents and stressful factors.[7] Resilience training has been shown to have many benefits for those who repeatedly experience stressful situations,[8] which affects the Quality of Life (QOL) of adolescents with chronic diseases.[9] Psychological problems and psychological symptoms are the main source of disabilities, social harms, and a decrease

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in the QOL of adolescents.[10,11] QOL is a subjective and multidimensional concept, which is defined as a person's positive and negative evaluation of the characteristics of life and their overall satisfaction in life.[12] Health-related quality of life (HRQOL) is used to evaluate the effectiveness of psychological treatment of patients.[13] Therefore, it is important to perform psychological interventions in adolescents with hemophilia.[14] One of these effective psychological interventions is the FRIENDS program.[15]

The FRIENDS program, developed in 1990, by Dr. Paula Barrett in Australia, is a brief mental health intervention program that has been positively evaluated by the World Health Organization (WHO) and the National Registry of Evidence-Based Programs and Practices (NREPP) and is aimed to promote resilience. It has also been shown to prevent anxiety.[16] The skills taught in the FRIENDS program focus on physiological, cognitive, and learning processes that lead to adaptation and anxiety management. In the cognitive skills section, children and adolescents learn how thoughts affect emotions and what they should do about it.[17]

Fisak *et al*.[18] in a meta-analytic review show that the FRIENDS program appears to be effective in reducing anxiety and depression in children and adolescents, and it can be considered a preventive and beneficial therapeutic approach. Furthermore, Arkian *et al*.[19] show that students can benefit from the FRIENDS psychoeducation programs along with other regular activities in academic settings to improve their psychological wellbeing. Närvänen[20] found that the FRIENDS program had a positive and beneficial effect on treating children's internalizing symptoms.

Hemophilia affects all aspects of the life of the affected person and his/her family, depending on the nature of the disease and recurrent bleeding. Therefore, adaptation and coping with these stressors seem essential. Moreover, the way in which adolescents respond to problems and stresses differs from culture to culture. According to the aforementioned, these adolescents have low resilience and HRQOL, which requires psychological interventions. In the "FRIENDS" educational program, individuals are equipped with knowledge about the causes of stressful experiences and the cognitive, learning, behavioral, and physiological consequences of facing these experiences. Various studies have been conducted using the "FRIENDS" educational program, but none of them have examined the effects of this intervention method on the resilience and HRQOL of adolescents with hemophilia, according to the searches conducted, which is clearly evident given the sensitive age of these individuals and the chronic nature of hemophilia. Therefore, this study was conducted with the aim of determining the effects of the "FRIENDS" educational program on resilience and HRQOL in adolescents with hemophilia.

Materials and Methods

This research was a clinical trial, and the research population consisted of all adolescents with hemophilia who visited the Hemophilia Center of Shahid Ayatollah Dastgheib Hospital, affiliated to Shiraz University of Medical Sciences, Iran, from August to October 2022. This study was approved by the Iranian Registry of Clinical Trials (IRCT20220712055451N1).

The number of samples required for the study, considering an impact factor of 0.8, an alpha of 0.05, and a study power of 80%, was calculated using the G-power sample size determination software; a sample size of 26 people in each group was calculated. Considering a 15% probability of attrition, the final sample size was determined to be 30 people in each group, for a total of 60 people, who were selected using a convenience sampling method and were equally divided into the intervention (30 people) and control (30 people) groups by random block allocation [Figure 1]. In block randomization, considering the total number of 60 adolescents and the existence of 2 groups, blocks of sizes 2, 4, and 6 were used. For example, in the case where the block size is 2, we will have two cases, AB and BA (A and B are the intervention and control groups). An online site was used to create the sequence and concealment. A dedicated randomization code was generated, and a block random assignment list was compiled. After the study objectives were fully explained, eligible research participants were selected and, based on the time priority of referral, each of them was assigned a code. By matching that number with the block random allocation list, the patients participating in the study were assigned to either the intervention or control group. This process continued until the estimated sample size was achieved.

The study inclusion criteria included consent of participants and signing a written informed consent form by the parents and adolescent, being a male adolescent in the age group of 13–19 years, obtaining a score of lower than 74 in the 28-item Child and Youth Resilience Measure (CYRM-28; Liebenberg and Ungar) and a score of lower than 50 in the KIDSCREEN-27 simultaneously, a minimum education of elementary school, and participating in similar training courses in the previous 6 months. The exclusion criteria included suffering from another chronic disease, the presence of mental disorders requiring immediate treatment, treatment with antidepression drugs, anxiety or psychotherapy programs or psychological interventions, the presence of severe stress in life during the implementation of the research, reviewing patient documentation, and simultaneous participation in training sessions similar to the present study.

In addition, the data were collected using a demographic characteristics form, the CYRM-28, and the KIDSCREEN-27.

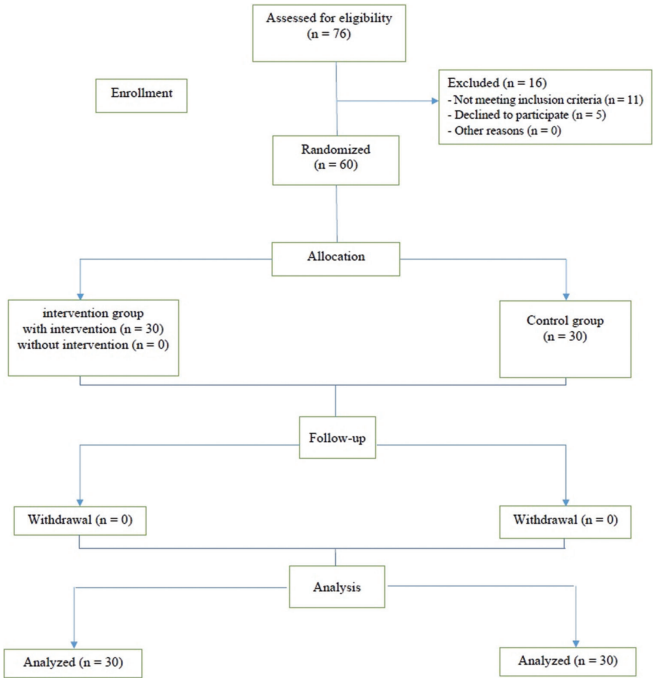

Figure 1: Consort

The CYRM-28 includes 28 items and consists of the three dimensions of individual (2-4-8-11-14-15-18-20-21-25), relational (3-5-6-7-12-17-24-26), and cultural (1-9-10-13-16-19-22-23-27-28). The items are scored on a Likert scale ranging from 1 (not at all) to 5 (a lot). In the CYRM-28, a score of 74 and higher indicates good resilience. Evidently, scores higher than 140 represent greater resilience.[21] In Iran, the validity and reliability of this tool were investigated and confirmed in a research conducted by Kazerouni Zand *et al*.[22] The correlation coefficients between the total score of the adolescent resilience scale and its subscales were considered positive and significant. The same results were also found for the score of the individual supporting factors scale and its subscales. The total score of resilience in individual, relational, and cultural factors, which were calculated from the validity analysis, was 0.85, 0.81, and 0.79, respectively. The reliability analysis showed that the Cronbach's alpha and two split-half coefficient was 0.85 and 0.8, respectively.[22]

The KIDSCREEN-27 includes five dimensions, physical wellbeing, psychological wellbeing, parent relations and autonomy, social support and peers, and school environment. The items of this tool are scored on a 5-point Likert scale ranging from 1 (never or not at all) to 5 (always or infinity). For each dimension, a scoring algorithm is used to calculate T-scores, which is scaled to a mean of 50 and a standard deviation of 10, while the total KIDSCREEN score is obtained by summing all item responses. The range of the overall HRQOL score is 42–119. Higher scores indicate better QOL.[23] In Iran, in a research conducted by Nik-Azin *et al*.,[24] the results of convergent validity showed that the relation between the dimensions of the KIDSCREEN-27 with similar dimensions in other questionnaires that measured similar structures was pretty average, strong, and significant, except for the social support and peers dimension. The results of the reliability analysis showed that the value of Cronbach's alpha for all subscales (except for the school environment dimension) was higher than the recommended value of 0.70, which is in the acceptable domain. Moreover, the test–retest coefficients for all subscales were strong.[24]

Adolescents were placed in two intervention and control groups. For the intervention group, we held 10 weekly 1-hour sessions, for 10 weeks.[25] The intervention was carried out in two groups, each consisting of 15 people. The session was held in a room in Shahid Ayatollah Dastgheib Hospital, to preserve the privacy of participants. Before conducting the intervention, at the stage before forming the group, we had a discussion with each participant about the desired conditions, the purpose of the research, the rules and regulations of the group, the place and time of the sessions, the duration of the therapy group, the number the sessions, the duration of each session, and the duties and responsibilities of participants.

In the intervention group, the FRIENDS educational program for adolescents was conducted using lectures, group discussions, question and answer, and brainstorming, by a trained researcher, under the supervision of a health psychologist [Table 1].[25] No training was presented to the control group.

Immediately after the end of the intervention, again both groups were asked to complete the CYRM-28 and KIDSCREEN-27, with the help of the researcher.

It should be noted that for prevention of data dissemination between the two groups, we held the sessions for the intervention group on even days and for the control group on odd days so that the participants would not share information with each other.

Finally, the data were entered into SPSS software (version 26; IBM Corp., Armonk, NY, USA). The collected data were analyzed through Chi-square, independent *t*-test, and paired *t*-test.

Ethical considerations

Permission to conduct this study was obtained from the Ethics Committee of Yasuj University of Medical Sciences with the IR.YUMS.REC.1401.046 code. The participants were assured that their information would remain confidential and their names and addresses would not be disclosed in the research. Written consent was obtained from all participants. To adhere to the ethical considerations, the training content was also provided to the control group after the study.

Results

This study was conducted on 60 adolescents with hemophilia. The mean (SD) age of the participants in the research was 15.50 (1.93) years. Moreover, the age range of the participants in the research was 13–19 years. All participants were male adolescents, and none of them had AIDS or hepatitis [Table 2].

In order to analyze the inferential findings, considering the central limit theorem and the fact that 60 people were randomly divided into 2 groups (n = 30), the research data could be calculated normally. Therefore, parametric statistical methods have been used in this research. The results of parametric independent t-test and paired t-test are reported in the between-group and intragroup comparison hypotheses, respectively.

In the mean overall score of resilience ($t_{58} = 0.47$; $p > 0.05$) and HRQOL ($t_{58} = 0.37$; $p > 0.05$), before the intervention, based on the independent t-test results, no statistically significant difference was observed. In the between-group comparison, based on the independent t-test results, a statistically significant difference was observed in the mean overall score of resilience ($t_{58} = 31.87$; $p < 0.01$) and HRQOL ($t_{58} = 20.54$; $p < 0.01$) immediately after the completion of the interventions. Intragroup comparison of the mean overall score of resilience and HRQOL was calculated in each group separately. The results of the paired t-test showed that there was a statistically significant difference in the mean overall score of resilience ($t_{29} = 14.21$; $p < 0.01$) and HRQOL ($t_{29} = 16.65$; $p < 0.01$) in the intervention group immediately after the intervention compared to before the intervention [Table 3].

Table 1: Intervention protocol

Sessions	Content
1st	Introduction to the FRIENDS* educational program
2nd	Introducing feelings
3rd	Good feeling and self-relaxation
4th	Expanding positive thoughts
5th	Search in solutions and plans of the previous stage
6th	Self-reward
7th	Do not forget the exercise
8th	Stay happy
9th	Generalize friends' coping skills in various difficult situations
10th	Conclusion

*FRIENDS: Feelings, relax, I can try my best, explore solutions, now reward yourself, do it every day, smile

Discussion

This research was conducted with the aim of determining the effect of the FRIENDS educational program on the resilience and HRQOL of adolescents with hemophilia.

The findings of this study showed that immediately after the completion of the research intervention, the mean resilience score in adolescents with hemophilia in the intervention group increased significantly compared to the control group. These results are in line with the findings of the study by Andisheh *et al*.[26] and Setoodeh *et al*.[27] However, Cheng *et al*.[28] showed that the digital cognitive behavioral therapy program improved resilience during the COVID-19 pandemic. Perhaps the reason for this is the similarity in the outcome and the positive effect of the independent variable in both studies. The results showed a significant difference in the mean resilience score of the adolescents with hemophilia in the intervention group immediately after the completion of the research intervention compared to the pretest. Suranata *et al*.[29] showed that the resilience of students in both the Internet-based cognitive behavioral counseling group and face-to-face cognitive

Table 2: Comparison of demographic characteristics in the studied groups

Row	Group Variable		Intervention group mean (SD)	Control group mean (SD)	p value
1	Age (year)		15.53 (1.93)	15.46 (1.97)	0.89*
2	Age of bleeding (month)		9.70 (7.33)	7.53 (6.68)	0.23*
3	Mean number of hemophilic patients in the family		1.10 (1.24)	0.86 (0.97)	0.42*
4	Mean doctor appointments per month		1.66 (0.88)	1.90 (1.12)	0.37*
5	The number of bleedings per month		3.00 (1.50)	2.70 (1.36)	0.42*
	Variable		**Intervention group *n* (%)**	**Control group *n* (%)**	***p* value**
6	Education	Elementary	5 (41.66)	7 (58.33)	0.68**
		Junior high	14 (56.00)	11 (44.00)	
		High school	11 (47.80)	12 (52.20)	
7	The amount of coagulation factor	Severe	12 (53.60)	13 (46.40)	0.70**
		Moderate	8 (42.10)	11 (57.90)	
		Low	7 (53.80)	6 (46.20)	
8	Type of coagulation factor	Factor 8	26 (50.00)	26 (50.00)	1.00**
		Factor 9	4 (50.00)	4 (50.00)	

*Independent t-test.**Chi-square test

Table 3: Comparison of mean and standard deviation scores of resilience and health-related quality of life in the study groups

Variable	Group	Mean (SD)		Level of significance (between groups)*
		Intervention	Control	
Total score of resilience	Before the intervention	2.67 (0.16)	2.65 (0.18)	0.63
	After the intervention	3.32 (0.14)	2.72 (0.14)	0.001
	Level of significance (intragroup)**	0.001	0.63	-
Total score of health-related quality of life	Before the intervention	2.71 (0.23)	2.69 (0.18)	0.70
	After the intervention	3.66 (0.20)	2.68 (0.15)	0.001
	Level of significance (intragroup)**	0.001	0.94	-

*Independent *t*-test. **Paired *t*-test

behavioral counseling group increased significantly after the intervention compared to before the intervention, with neither being superior to the other. These results are in line with the current study, which seems to be due to the similarity of holding group educational sessions and performing a cognitive behavioral therapy program in both studies, which increases the students' resilience. Early works on resilience interventions show that promoting resilience helps to improve adaptability and emotional wellbeing and thus enables better self-care and health.[30] Therefore, promoting resilience in adolescents with hemophilia has beneficial effects.

In the present study, immediately after the completion of the intervention, the mean HRQOL score of adolescents with hemophilia in the intervention groups increased significantly compared to the control group. Kozina[31] showed that the FRIENDS for Life social-emotional learning program is an effective intervention in the treatment of anxiety disorders and aggression in students. The independent variable in both studies has a positive outcome, and they have a relatively similar intervention protocol. The interventions in both studies were carried out in 10 sessions. There was a significant difference in the mean HRQOL score of adolescents with hemophilia in the intervention group between the posttest and pretest. HRQOL is used as a health indicator among children and adolescents to evaluate physical and social performance, mental health, and wellbeing. It is also used to identify subgroups with poor health status and guide intervention strategies. It is important to improve the health of the younger population.[32] Factors such as the questions being subjective, mental and personal problems that arose during the intervention, and the low number of samples due to the small number of people with hemophilia are the limitations of this study. It is suggested that another study be conducted under the title of the effect of the FRIENDS educational program in a family-oriented way on the resilience and HRQOL in adolescents with hemophilia.

Conclusion

According to the findings of this study, it can be concluded that the implementation of the FRIENDS educational program had a positive and beneficial effect on the resilience and HRQOL of adolescents with hemophilia. Therefore, the implementation of this intervention improved the resilience and HRQOL of adolescents with hemophilia. This improvement in the aforementioned variables may reduce anxiety, stress, tension, and worry in these individuals and help them adapt to this issue and, by creating mental and psychological peace in these individuals, help them perform their daily activities. Moreover, since purposeful communication between the client and the nurse is one of the main topics of the nursing profession, it is suggested that the members of the health team consider the implementation of this educational program as part of the treatment program of adolescents with hemophilia.

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Conflicts of interest

Nothing to declare.

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