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ORIGINAL PAPER

Effectiveness of Psycho-Religious Sexuality Education upon Anger and Depression of Iranian Female Adolescents: The Relationship of Quality Family Relationships and Birth Order

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Abstract
Sexually active adolescents tend to have a wider range of psychosocial problems, including depression, anger, poor academic achievement, low self-esteem, and substance use. Developing a high-quality and curriculum-based comprehensive sexuality education (CSE) program is of great importance for adolescents following Iranian culture. Due to the lack of such an educational program, the purpose of this study was to investigate the effectiveness of psycho-religious CSE upon anger and depression of Iranian female adolescents, as well as the relationship of quality family relationships and birth order. The research design is quasi-experimental with pre-test and post-test with experimental and control groups. The statistical population of this study comprised all Iranian female adolescents aged 15 to 18 years in Mashhad who participated in this workshop voluntarily. For data collection, the Child and Adolescent Depression Inventory and Spielberger's State-Trait Anger Expression Inventory (STAXI) were used. SPSS 21 software and analysis of variance (ANOVA) and covariance (ANCOVA) were used for data analysis. The results showed that there was a significant difference in the mean difference between depression and anger in the control and experimental groups (p-Value < 0.05). The results also showed a significant relationship between birth order and the quality of family relationships on depression and anger. Psycho-religious-based SE can reduce depression and anger in female students. These findings can be used in planning educational interventions with a psycho-religious-based approach to reducing anger, depressive symptoms and dangerous sexual behaviors among adolescents.

Keywords Sex education · Depression · Anger · Iranian female adolescent · Birth order

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Introduction

Adolescence is a transitional stage of human physical and mental development that generally occurs during the period from puberty to adulthood. The World Health Organization (WHO, 2014; Sisk & Gee, 2022) describes adolescence as a period of human evolution, one of the characteristics of which is puberty (Xerxa et al., 2021). Puberty is an important stage of development that in addition to psychological changes is associated with biological changes such as mutations in height and weight, skeletal development, and the development of the reproductive and sexual system (WHO, 2014). Adolescents become acquainted with sex at puberty and sometimes pursue problematic sexual behavior that predicts sexual misconduct or is accompanied by signs of underlying emotional issues (Riad & Forden, 2021). Therefore, getting acquainted with the emerging phenomenon of sex and the correct way to deal with it, is one of the most basic needs of adolescents at this stage of life (Berdychevsky, 2017).

Today, the quality of the family relationship is one of the most important issues in people's health care and one of the biggest health goals to increase health (Martin-Storey et al., 2021). The World Health Organization defines the quality of family relationships as people's perception of their position in life, in terms of their culture and value system, goals, standards, and interests. This definition includes six dimensions physical health, mental health, independence, social relationships, environmental status, and religious interests (Umberson & Montez, 2010). Structural factors such as psychological distress (depression, stress, and anxiety) are important for the quality of family relationships in that they could determine and predict the behavior of subjects within a population (Kehler et al., 2022).

Depression is a state of low mood and aversion to activity (Fujihara & Tabuchi, 2022). It can affect a person's thoughts, behavior, motivation, feelings, and sense of well-being (Berger et al., 2022). Few people do not experience depression during their lifetime (Ibrahim et al., 2019). Undoubtedly, depression in the community disrupts the health and development of the community (Turan, 2021). In the field of developmental pathological psychology, the presence or absence of depression in children and adolescents has been disputed for many years (Shoesmith et al., 2018).

Depression in adolescents occurs during major personal changes (McKay et al., 2021). It significantly increases the likelihood of suicide, substance abuse, and behavioral and communication problems, leading to declining incompetency and academic achievement (Arafat et al., 2017). Research also shows that one of the psychological constructs associated with depression is anger (Jacobson & Newman, 2014), and 30–40% of people with depression experience this emotion as well (Abi-Habib & Luyten, 2013).

Anger is a state of psychological and physiological arousal that occurs when dealing with an internal or external obstacle or threat and causes the spread of issues such as depression. It is usually experienced when a person fails and provides the feeling of absence and emptiness, which are the most important factors

in causing depression (Cheng & Chan, 2005; Turan, 2021). According to Ryan & Desi (2020), maladaptive behaviors spread in social contexts where the psychological needs of individuals are threatened. In such social contexts, individuals belong to society, but a sense of alienation from society is created. As a result, heterogeneity (aggression) also increases (Rollston et al., 2020). If people fail to meet their needs, they feel angry (Goldfarb & Lieberman, 2020). According to the failure-aggression theory of Dollard and Miller, creating barriers to people achieving goals lead to feelings of failure in them and turn provokes anger and aggressive behaviors (Wall Myers et al., 2018).

High levels of stress, anxiety, and worry in adolescents lead to reduced quality of life (Ljótsson et al., 2010; Martin-Storey et al., 2021). The child's regular position in the family rankings is related to mental function, personality, behavior, and the development of psychological pathology (Risal & Tharoor, 2012). Research has shown the relationship between birth order and various forms of psychopathology, including depression (Contreras et al., 2020), anger (Ryan & Desi, 2020; Goldfarb & Lieberman, 2020) and quality of family relationships, and the negative effects on well-being (Fullerton et al., 1989).

Sulloway (2001) illustrated that compared to later born, firstborns get angry quickly and more anxious. Feehan et al. (1994) declared that in adolescence, more girls, firstborns, and children from small families had a more diagnostic and statistical manual of mental disorders (DSM-III personality disorders), but they found no significant relationship between them. However, few studies have specifically examined the effect of birth order on the mental health of young adults, and the results of most birth order studies are contradictory (Conley, 1980; Risal & Tharoor, 2012). Haukka et al. (2004) and Kemppainen et al. (2001) found that the lack of sufficient theoretical foundations and explicit hypotheses is the main problems in this regard. However, the importance of birth order in the spread of psychiatric illnesses is still controversial.

One of the most effective ways to increase the awareness, attitude, and ability of adolescents to protect themselves from damage is by implementing a high-quality and curriculum-based comprehensive sexuality education (CSE) (Goldfarb & Lieberman, 2020). The CSE is one of the dimensions of education that addresses the guidance of sexual instinct and lays the groundwork for sexual, physical, and mental health (Wu & Zeng, 2020). Neglecting this educational aspect can cause many problems, especially in adolescence (Rollston et al., 2020). In leading educational systems, CSE programs are developed and implemented for this dimension of education (Goldfarb & Lieberman, 2020).

However, in Iran, this educational dimension is still neglected (Khalili et al., 2020). Studies show that CSE is essential to prevent high-risk sexual behaviors (HRSB) and their negative consequences (Reis et al., 2011) and that children and adolescents want to learn about sex (Nelson et al., 2019). HRSB can also harm both the individual and society (Gardner, 2011; Wahyuni, Zulkifli, & Mallongi, 2020). In particular, sexual behavior among young people and its consequences has become a growing concern (Khalili et al., 2020).

The prevalence of HRSB among young people and adolescents has become a social issue (Avery & Lazdane, 2010; Edgardh, 2002; Pleck et al., 1993; Workowski

& Bolan, 2015; Khalili et al., 2020) and most young people report having sex in some stages of adolescence (Madkour et al., 2010). Hence, the CSE of adolescents is one of the necessities of puberty. The main problem facing today's society is the lack of sufficient information about sexual issues (Wahyuni et al., 2020). CSE training has beneficial results including, and it promotes awareness and a sense of self-efficacy and reducing psychological symptoms (Cardoso et al., 2015; Goldfarb & Lieberman, 2020; Wu & Zeng, 2020). The consequence of adolescent CSE classes is that they find relatively broad and clear information about sexual issues and problems around them (Berdychevsky, 2017).

Studies also show that educational interventions can successfully reduce sexual anxiety (Allen et al., 2016; Goldfarb & Lieberman, 2020). Despite the importance of the issue, adults and educators are reluctant to give clear answers to their children and adolescents when confronted with the issue of sexuality. This is because, Iran being a majority Muslim country, views sex education for youth as a conflict of religious interest (Gilliam et al., 2014). Research from around the world clearly shows that CSE never leads to early sexual activity (Saito, 1998; Workowski & Bolan, 2015; Goldfarb & Lieberman, 2020; McKay et al., 2021). Research has also shown that CSE does not have a direct effect on the age of sexual activity and makes a person take on more responsibilities and the subsequent consequences of their sexual behavior (Rollston et al., 2020).

Although nearly two decades have passed since the introduction of CSE in Western schools, high school students' knowledge of sexuality is still incomplete (Bauer et al., 2020). One of the main reasons for this is the lack of sufficient scientific information for teachers on this issue and the resistance of the education system to CSE programs (Nunez et al., 2019; Rollston et al., 2020). The result of adolescent CSE classes is that they find relatively broad and clear information about sexual issues and the problems surrounding them (Berdychowski, 2017).

The Current Study: Educational Intervention

Because educational interventions in the field of HRSB are of great importance, research has been conducted in this field. Nelson et al. (2019), showed that online CSE programs reduce the risk of AIDS and increase HRSB in girls. Berdychowski (2017) presented a sexual health education program for young tourists. Gegenfurtner and Gebhardt (2017) also examined the issues of CSE and its conflicts with family and religion and showed that CSE promotes healthy sexual behaviors in students. In this regard, Villar and Concha (2012) stated that cultural factors and characteristics should be considered in CSE. Rollston et al. (2020) declared that the failure to utilize a CSE internationally puts all people at increased risk of violence.

In general, these studies have focused on teaching healthy sexual behaviors that are in conflict with Iranian culture and values for people before marriage (Coultas et al., 2020). Despite the impact of healthy CSE on adolescent health, there are still controversies over how and why in schools (Berdychowski, 2017). On the other hand, the use of CSE programs designed by other countries conflicts with Iranian culture and values (Gegenfurtner & Gebhardt, 2017; Sherwin et al., 2022). Unfortunately, the issue of

CSE has not been officially addressed in Iranian society. Therefore, if our society wants to solve its problems in this field realistically, it needs an educational system and an efficient moral system (individual and social) in the shadow of the CSE curriculum. In this regard, the development of an adolescent CSE program following Iranian culture is of great importance. Therefore, designing an educational package for adolescent CSE based on Iranian adolescent culture is one of the necessities.

The CSE curriculum for secondary school refers to the goals, content, and opportunities of learning, implementation, and evaluation in a way that leads to relatively lasting changes in the learner's sexual behavior (Wu & Zeng, 2020). CSE curriculum learning provides opportunities for high school students to include learning about self-existence (instincts, desires, existential components of secondary sexual attributes, their meditation, and health, interaction with others, especially the opposite sex, and generation) (McKay et al., 2014; Wight & Fullerton, 2013; McKay et al., 2021). It seems that there is no suitable educational program in the field of the effectiveness of CSE in female adolescents in reducing anger and depressive symptoms in Iran; therefore, in the present study, the adolescent psycho-religious-based CSE package is the first educational package designed specifically for adolescents in Iran. Therefore, the question arises whether the training of the psycho-religious-based CSE package is designed to reduce anger and depressive symptoms?

Relying on theoretical and research foundations, this research has tried to take a step by preparing a psycho-religious-based CSE approach and considering the lack of such programs in Iran. Moreover, this study aimed to investigate the effectiveness of psycho-religious CSE upon anger and depression of Iranian female adolescents and also, the relationship of quality family relationships and birth order.

Question Hypotheses

Is psycho-religious-based CSE effective in reducing anger and depressive symptoms among female adolescents?

Is there a relationship between the quality of family relationships and depression and anger among female adolescents?

Is there a relationship between birth order and depression and anger among female adolescents?

Research Method

The research method is experimental.

Research Design and Participants

The research design is a quasi-experimental pre-test and post-test using experimental and control groups. The sample includes all Iranian adolescent girls 15- to 18-year-old girls in Mashhad who participated in this workshop voluntarily in 2020.

A sample of 30 people from the student community was available voluntarily. The participants were assigned randomly to either the experimental or control group (15 individuals per group) (Fig. 1).

Inclusion and Exclusion Criteria

Inclusion criteria: (i) a minimum and maximum of 15–18 years of age, (ii) not receiving any similar training services before or during the program, (iii) no symptoms of severe mental illness, and (iv) satisfaction with participating in a CSE program.

Exclusion criteria: (i) reluctance to continue the program by the teenager, (ii) having severe physical illnesses (symptoms of coronary heart disease due to the

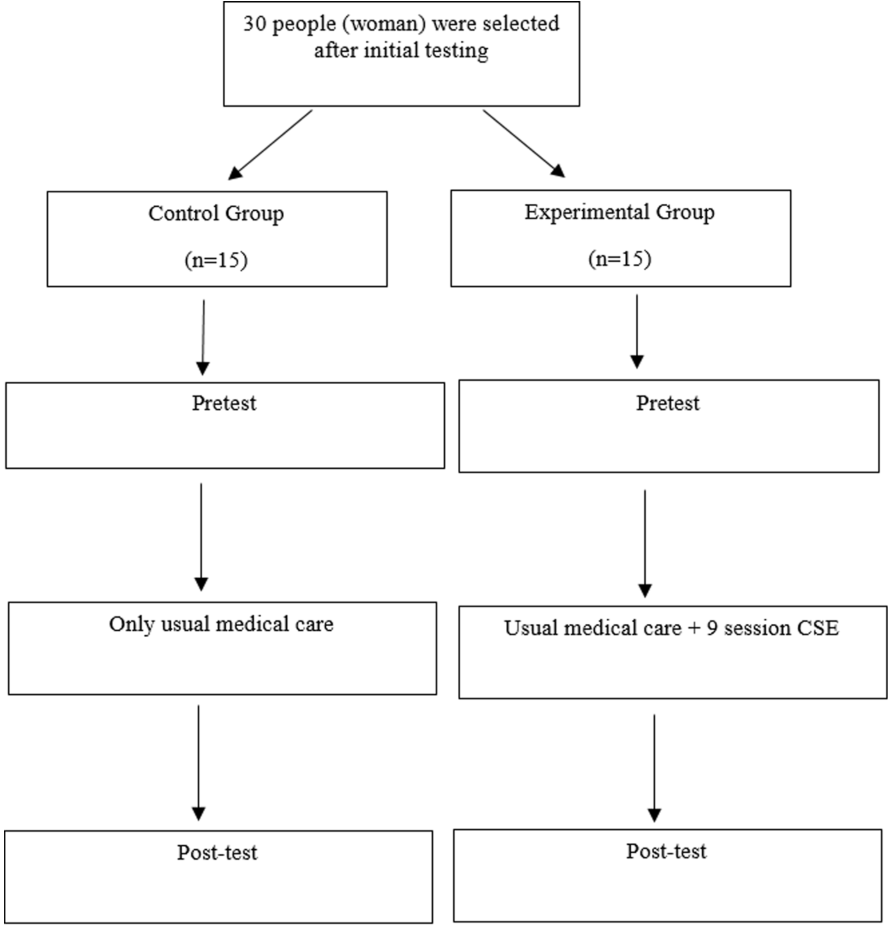

Fig. 1 Participant flow throughout the study

prevalence of COVID-19 virus) that prevent adolescents from attending and cooperating, and (iii) unpredictable problems that prevent the teen from continuing the program.

For data collection, the Child and Adolescent Depression Inventory and Spielberger's State-Trait Anger Expression Inventory (STAXI) were used. The experimental group, along with regular medical care, received a CSE program for 9 weekly sessions of 100 min (11 h per week) in the private clinic of the psychologist of Mashhad. The control group received only regular medical care in this period. Participants in both groups responded to the questionnaires before the intervention (pre-test) and immediately after the intervention (post-test). SPSS 21 software and analysis of variance and covariance were used for data analysis.

Tool Used

The measurements were translated into Persian and back translated to English by bilingual researchers to check language equivalency.

a. Children and adolescent depression scale (CADS)

   In this study, the Dr. Jan Bozorgi Depression Scale was used. This scale is based on the clinical need of the Iranian society for a tool that is as comprehensive as possible. In constructing this scale, the theories of clinical psychologists in the field of child and adolescent depression were examined and compared with the DSM criteria for child depression, and then, a list of 12 main categories (recreation and entertainment, social relations (active and isolated), efficiency education, irritability, feelings of sadness, crying, appetite, sleep deprivation, guilt, suicide, and activity) and subcategories is additional questions. This scale consists of several axes (questions) with a set of phrases, and each axis represents the state of the person in the past week. This scale evaluates 12 main categories for measuring depression in children and adolescents. The validity of the experiment was measured by referring the scale items to 10 pediatric clinical specialists and after the necessary changes, and it was performed on 1546 Iranian children (aged 7 to 18 years). The alpha coefficient or validity of the experiment with Cronbach's alpha method is equal to 0.86. The experimental scoring is based on the Likert method from 0 to 4 for axes 1 to 12 and for additional questions (0 and 1) for yes and no.

b. The Spielberger's State-Trait Anger Expression Inventory (STAXI)

   This questionnaire is a paper–pencil scale that has been prepared for the age group of 16–30 years and has 57 items and includes six scales and five subscales, and its items are organized in three sections. The method of scoring and interpreting the first part, entitled "I feel right now," measures the anger of the state, in which the subjects express the intensity of their feelings on a four-point Likert scale from "by no means = 1" to "very high = 4" is rated. The data summarized in the practical test guide shows that the alpha coefficients for the scales and subscales for anger expression and anger trait are 0.84 or higher and for the scales for anger expression, anger control, and general anger expression index are

0.73 or higher. Therefore, Cronbach's alpha coefficients as measures of internal coordination have a generally satisfactory effect on the different components of STAXI-2. The sex and disease of the subjects have no significant effect on alpha coefficients.

Intervention Program: Psycho-religious-based CSE Training Protocol

This educational intervention was used following the comprehensive guide to sex education (US Council on Sexual Information and Education, 2004; WHO, 2008) and following Iranian religious and cultural conditions and Islamic Iranian resources. In this study, an adapted training program based on a CSE program was used in the form of a 7-session program with interactive, practices, and skills training activities after expert opinion and the approval of the professors. It was taken from the training package of Mobredi et al. (2018). The training was conducted in the form of 7 weeks, for 100 min, 11 h per week (three days a week and on Sundays, Tuesdays, and Thursdays) in groups (classroom, lecture teaching method) in the school assembly hall. The steps and instructions of the program were as follows: At the beginning of the program, the purpose of the research was introduced, and the answers were confidential. Also, the information of the participants in this research was introduced, and the educational psychologist (as a sex education expert and collaborator in this research) was introduced. The necessary training was performed in different sessions (Table 1). At the end of the sessions, the subjects of the experimental and control groups were evaluated. The CSE program is usually categorized and organized into six key concepts, each of which emphasizes an important area of learning for children and adolescents. These key concepts are human growth, communication, individual skills, sexual behavior, sexual health, society, and culture.

Procedure

After the random replacement of participants in the experimental groups and the control group, a pre-test was performed. To measure the effectiveness of the independent variable on the dependent variables, the experimental group received a CSE training program, while this program was not implemented in the control group.

Ethical Considerations

The ethical considerations of this study were: obtaining informed written consent from the participants, keeping the participants "information confidential, respecting the participants" privacy, providing the techniques taught to each group for the other group after the study, and allowing them to withdraw from the study at any time. Informed consent was obtained from all participants included in this study. The control group did not receive any training, but to respect their participation and maintain ethics, they were given books at the end of the course. There were no explicitly

Table 1 Description of sex education training sessions

Session	Purposes	Contents
1	The familiarity of the subjects with each other, the familiarity of the subjects with the program, and how to implement it	1. Greetings and initial consideration 2. Students' initial self-introduction 3. The principle of confidentiality 4. Expressing the goals of the program and introducing the plan in full (determining the day and time of the training sessions) 5. Pre-test
2 Human growth	1. Teaching physical and psychological changes during puberty based on the principles of developmental psychology 2. Understanding your existential value as a person of a particular gender 3. Self-esteem and self-worth	Teaching the need to address sex education by emphasizing the goals of sexual education at puberty in psychology: 1. Who is a human being? 2. Self-knowledge, who am I? (Independence, aesthetics, self-centeredness, etc.) 3. Puberty and adolescence 4. Stages of identity formation 5. Mindfulness (via movie screening) 6. Homework (identity worksheet)
3 Relationship	1. Learn to understand the privacy of yourself and others 2. Recognize the types of communication 3. Recognize duties and responsibilities	1. Privacy, sexuality, and physical integrity 2. Shyness, chastity, and hijab 3. Family, friends, love, and romantic relationships 4. Define the different roles, rights, and responsibilities of family members 5. Long-term commitment and marriage
4 Individual skills	1. Learn to recognize and understand needs and emotions 2. Recognize attitudes and gender differences	Teaching needs and emotions and how to deal with them such as anger, depression, and …
5 Sexual behavior	Training decision-making skills and courage	1. Teaching the principle of consequential thinking and consulting with others during sexual encounters 2. Learning to draw a profit and loss table at the time of decision 3. Skills training with theater performance (say no firmly)
6 Sexual health	Self-care skills	1. Sexually transmitted diseases (AIDS, syphilis, gonorrhea …) 2. Health
7 Society and culture	Cultures and customs Summary	Post-test

Table 2 Frequency distribution of age variables in control and experimental groups

Variable			Group		Sum
			Control	Test	
Age (year)	15	No	6	0	6
		Percent	40	0	20
	16	No	4	8	12
		Percent	26.7	53.3	40
	17	No	3	7	10
		Percent	20	46.7	33.3
	18	No	2	0	2
		Percent	13.3	0	6.7
	Sum	No	15	15	30
		Percent	100	100	100

Table 3 Descriptive indicators of age variables in control and experimental groups

Group	No	Min	Max	Mean	S.D
Control	15	15	18	16.07	1.1
Experimental	15	16	17	16.47	0.516
Sum	30	15	18	16.27	0.868

stated exclusion criteria. After the administrative process, obtaining the license of the Regional Ethics Committee of the Islamic Azad University of Mashhad Branch, the researchers obtained an official license from the management of counseling centers and presented it to the relevant authorities, and received the necessary permission to conduct the study.

Data Analysis

To analyze the data obtained in this study, descriptive and inferential statistics (ANOVA and ANCOVA) were used.

Results

The results in Table 2 show that in the control group, 40% are fifteen years old and 26.7% are sixteen years old. In the experimental group, 53.3% are sixteen years old and 46.7% are seventeen years old. In total, 40% of people are sixteen years old.

The results in Table 3 show that the average age in the control group is 16.7 years, in the experimental group is 16.47 years and in total the average age of the sample is 16.27 years.

In Table 4, the mean and standard deviation (S.D.) of the variables of depression and anger in both the pre-test and post-test (before and after the

Table 4 Mean and S.D of depression and anger variables in control and experimental groups

Variables	Stage	Control group		Experimental group	
		Mean	S.D	Mean	S.D
Anger	Pre-test	2.993	1.148	2.643	1.157
	Post-test	2.865	1.137	1.800	0.894
Depression	Pre-test	3.456	1.093	3.869	0.760
	Post-test	3.320	1.105	2.920	0.903

psycho-religious-based CSE teachings), and the control and experimental groups are reported. As seen, the mean in the experimental group in the post-test for the variables of anger and depression has decreased. In Fig. 2, the average variables of anger, depression, and premarital relationship tendency in two control and experimental groups and two pre-test and post-test conditions are plotted.

Since one of the presuppositions used in the ANCOVA is the homogeneity of variances, this assumption was first examined in Levene's test (Table 5).

The results of Levene's test are for anger score ($P > 0.05$ and $F = 4.28$) and depression score ($P > 0.05$ and $F = 3.41$), which indicates that the condition of equality of

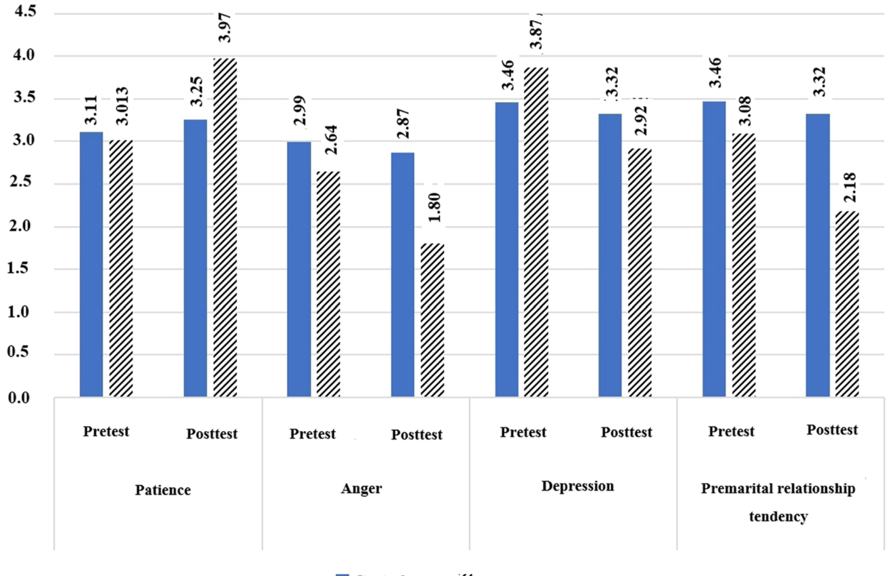

Fig. 2 Average variables of anger, and depression in two control, and experimental groups

Table 5 Levene's test results to examine the homogeneity of variances in the post-test

Variables	Df1	Df2	F	Sig
Anger	1	28	4.28	0.24
Depression	1	28	3.41	0.13

Table 6 Results of Kolmogorov–Smirnov test

Variables	Stage	Z	Sig
Anger	Pre-test	0.13	0.20
	Post-test	0.15	0.14
Depression	Pre-test	0.17	0.08
	Post-test	0.16	0.11

Table 7 ANCOVA of anger, depression variables

Variables	Source of effect	F	Sig	Effect size
Anger	Pre-test	5.405	<0.001	0.57
	Group	9.090	<0.001	0.69
Depression	Pre-test	14.473	<0.001	0.82
	Group	25.510	<0.001	0.906

variances is met. Another condition for using ANCOVA is the normality of scores. To verify this assumption, the Kolmogorov–Smirnov test was used, the results of which are shown in Table 6.

According to Table 6, the significance level of the Z test in both pre-test and post-test stages for both anger and depression variables is greater than 0.05. Therefore, the data have a normal distribution. The results of ANCOVA of experimental and control groups in anger and depression variables in Table 7 show that CSE training has been effective on anger ($P < 0.01$ and $F = 9.09$) and depression ($P < 0.01$ and $F = 14.47$). Therefore, by eliminating the effect of anger and depression scores of the pre-test as a variable, the main effect of adolescent CSE on anger and depression variables is significant. In other words, CSE has been able to reduce anger and depression.

Kruskal–Wallis test was used to evaluate the effect of the quality level of family relationships on depression and anger in the pre-test and post-test stages (Table 8). The value of this test for all the variables is less than 0.05, and the assumption of the equality of means is rejected. As a result, there is a significant difference between the median of these variables in the three levels of quality of communication with the family at the level of 5% error. Moreover, increasing the quality of communication with the family reduces the rate of depression and anger.

The results in Table 9 show that the depression variable (pre-test) has a normal distribution at each level of the family birth order (p Value > 0.05). Therefore, the ANOVA parametric test will be used to examine the depression variable, and the Kruskal–Wallis nonparametric test will be used for the anger variable. Table 10 reports the results of the variance homogeneity test and ANOVA.

According to Table 10, there is no significant difference between the mean of depression in the three levels of the birth order of children in the family at the level of a 5% error. In other words, the birth order does not affect depression (pre-test) among female adolescents. Table 11 shows the results of the Kruskal–Wallis test for depression (post-test).

Table 8 Effect of quality of family relationship level on depression and anger in pre-test and post-test

Variables	Quality of family relationships	Average rating	Test statistics	Probability value
Anger (Pre-test)	Weak	6.00	15.224	0.000
	Medium	14.00		
	Good	21.77		
Anger (Post-test)	Weak	23.29	16.716	0.000
	Medium	19.50		
	Good	8.23		
Depression (Pre-test)	Weak	24.64	15.437	0.000
	Medium	17.65		
	Good	8.92		
Depression (Post-test)	Weak	24.57	17.271	0.000
	Medium	18.50		
	Good	8.31		

Table 9 Test of normality of variables in the birth order of family children

Variables	Birth order	Test statistics	Probability value	Result
Anger (Pre-test)	1th	0.254	0.031	Abnormal
	2th	0.179	0.200	Normal
	3th	0.277	0.070	Normal
Anger (Post-test)	1th	0.158	0.200	Normal
	2th	0.135	0.200	Normal
	3th	0.365	0.002	Normal
Depression (Pre-test)	1th	0.114	0.200	Abnormal
	2th	0.118	0.200	Normal
	3th	0.257	0.129	Normal
Depression (Post-test)	1th	0.183	0.200	Normal
	2th	0.169	0.200	Normal
	3th	0.309	0.024	Abnormal

Table 10 ANOVA of the effect of family birth order on depression (pre-test)

Variable	Homogeneity test of variances		Mean equality test	
	Levene's test	Probability value	Fisher's exact test	Probability value
Depression (Pre-test)	0.899	0.419	2.524	0.099

In Table 11, the probability value of the Kruskal–Wallis test for both variables is less than 0.05, and the assumption of the equality of the medians is rejected. As a result, there is a significant difference between the median of these variables in the three levels of the birth order of children in the family at the level of a 5% error. In

Table 11 Effect of family birth order in pre-test and post-test on anger and depression variables

Variables	Birth order	Average rating	Test statistics	Probability value
Anger (Pre-test)	1th	19.17	6.434	0.040
	2th	16.25		
	3th	9.06		
Anger (Post-test)	1th	19.67	7.648	0.022
	2th	15.95		
	3th	8.69		
Depression (Post-test)	1th	19.08	6.454	0.040
	2th	16.40		
	3th	9.00		

other words, the birth order of family children affects depression and anger (post-test) among female adolescents.

Discussion

This study aimed to prepare an educational protocol based on CSE in biological, cultural, social, psychological, and religious dimensions and to determine its effectiveness in reducing anger and depression. Therefore, one of the research questions was: Is psycho-religious-based CSE training protocol effective in reducing anger and depressive symptoms among female adolescents?

Psycho-religious-based CSE is effective in reducing anger and depression among female adolescents.

After examining the hypothesis, the results showed that after presenting the CSE training sessions, there was a significant difference between the performance of the experimental group and the control group in responding to the depression and anger questionnaires. The results showed that the experimental group performed better than the control group and received a lower score on depression and anger in response to the post-test, which meant that the education on CSE components was effective and girls' depression and anger were reduced. Therefore, based on the results of this study, it can be said that teaching the components of CSE to girls has been effective in reducing their depression and anger. Therefore, the research question was accepted at a significant level.

The results of this study are consistent with the findings of Stokes et al. (1983) that CSE in different ways is effective in reducing depression, anxiety, and anger. These findings are also consistent with the results of Kumar and Bhukar (2013), Toros and Tiirik (2016), Abolghasemi et al. (2010), Nunez et al. (2019), Preston (2019), Coultas et al. (2020), Wu and Zeng (2020), Riad and Forden, (2021), McKay et al. (2021); Fujihara and Tabuchi (2022) and Kehler et al. (2022) on the effectiveness of CSE in reducing puberty injuries and increasing adolescent health. Zhang et al. (2013) stated that lack of CSE in children and subsequent sexual harassment has negative effects on children and causes age-inappropriate sexual behaviors

and behavioral problems in the victim. It can also cause significant disorders such as anxiety, depression, and anger.

In explaining this finding, it can be stated that students' awareness of gender issues such as distinguishing normal sexual behavior from abnormal behavior, the appropriate approach to issues related to sexual behavior, age-appropriate behaviors, time to teach sexual issues, how to form a sexual identity, puberty, communication with peers, controlling students' information resources, etc. CSE helped them to become more aware and better understand information and easily adopt appropriate behavior. Therefore, this education and awareness will prevent maladaptive behaviors and increase the student's sense of empowerment (Turnbull et al., 2008).

There is a relationship between the quality of family relationships, depression, and anger among female adolescents.

The results showed that with increasing the level of quality of communication with family, depression and anger decrease (Martin-Storey et al., 2021). The more the family environment allows for a comfortable conversation about a wide range of topics, and the more time it takes for family members to share their thoughts and feelings, the less likely their children are to become anxious and depressed.

Having cohesion in the family and non-discrimination between family members is very useful in reducing mental disorders such as depression; excessive care or lack of care (Mancini, 2000; Kitamura et al., 2000). Also, a lack of sense of security in the family (Myhr et al., 2004) and a lack of adjustment and solidarity with the family are associated with depression and suicidal ideation. There is a positive correlation between parental punishment and blame and girls' depression. Authoritarian parents blame the child for his/her mistakes, but never explain the reason for the punishment. This group of children may constantly fluctuate between depression (self-blame), anxiety (expecting blame), and a defensive state (blaming others).

Symptoms of depression and anxiety are seen in most children of authoritarian families (Briere & Elliot, 2003). The findings of Christensen et al. (2011) also showed that with increasing the level of quality of the family relationship, anger decreases; so the more family cohesion, the less aggressive the children of the family will be. The phenomenon of puberty creates emotions in adolescents that sometimes lead to academic backwardness and in most cases dropout (Achora, et al., 2018). The biggest supporter of the teenager at this time is the family, and this is where the family should protect adolescent girls from many plagues, deviations, and crimes by creating a warm and sincere environment and giving the necessary education to the teenagers (Sisk & Gee, 2022; Xerxa et al., 2021).

There is a relationship between birth order, depression, and anger among female adolescents.

The results of fitting the research model in line with psychological research showed that there is a relationship between birth order and depression and anger among female adolescents. This finding is consistent with the findings of Kindwell (1982), Gates et al. (2005), Wells et al. (1985), Easey et al. (2019), Hersh et al. (2019), and Kehler et al. (2022). They emphasized the difference between birth order and depression and children's anger. In this regard, Adler (1931–1937) stated that the first children, although in a superior position, are more prone to stress, depression, and anxiety, because, at the birth of a younger sibling, they have to face

permanent problems caused by losing the position (Stein, 2006; Goldfarb & Lieberman, 2020).

Study Limitations

The limitations of the present study include lack of control over the socio-economic status of the family, lack of attention to the impact of parental education, and in general, lack of accurate control of all variables and conditions affecting various aspects of increasing girls' awareness. There is a serious need for CSE training, as a core field, to have a proper place in the high school curriculum and to be presented to students in the form of a formal or pre-determined curriculum.

Conclusion

The results showed a significant relationship between birth order and the quality of family relationships on depression and anger. Also, psycho-religious-based CSE can reduce depression and anger in female students. These findings can be used in planning the prospective sexuality education intervention with a psycho-religious-based approach to reducing anger and depressive symptoms and dangerous sexual behaviors among adolescents.

Implications for Family Therapy/Practice

Psycho-religious-based CSE has a key role in the function of a healthy family and as a result, those families who use the right strategies for establishing psycho-religious-based CSE are more capable of solving personal/social problems and are more satisfied with their psychological problems.

Direction for Future Research

According to the results of this study and to validate and recognize CSE in the high school curriculum, the following suggestions can be made: There is a serious need for CSE, as a core field, to have a proper place in the high school curriculum and to be presented to students in the form of a formal or pre-determined curriculum. It is also suggested that in the content of the life insights and skills book, the topics raised in this research be presented in a codified form, and students through these books, the necessary knowledge and basic knowledge in the field of CSE with a religious approach and acquire psychologically.

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Declarations

Conflict of interest The authors declare that they have no known competing financial interests.

Ethical Approval We certify that the study was performed in accordance with the ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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