



Intervention Effect of the Video Health Education Model Based on Solution-Focused Theory on Adolescents' Mental Health during the COVID-19 Pandemic

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(Received 09 Apr 2021; accepted 10 Jun 2021)

Abstract

Background: Given the long-term impact of public health emergencies on adolescents' mental health, extensive effort should be exerted in the psychological intervention of adolescents during the COVID-19 pandemic. This study combined solution-focused theory and video health education to explore the intervention effect of this model on adolescents' mental health.

Methods: Overall, 126 volunteers with anxiety symptoms from four communities in 2021 in Anhui Province, China were randomly divided into the intervention and control groups (63 members in each group). The control group only received health education popularized in the community. By contrast, the intervention group was given the same health education and provided with solution-focused psychological counseling and short video health education related to the pandemic.

Results: Results after the intervention were as follows: 1) The Self-rating Anxiety Scale scores of both groups were low, but the effect on the intervention group was better than the control group ($P < 0.05$). 2) Both groups' positive and negative affect scores were higher and lower than those before the intervention were, but changes in the scores of the intervention group were greater than that of the control group ($P < 0.05$).

Conclusion: The group intervention of solution-focused theory combined with video health education can improve the mental health level of adolescents, effectively alleviate their anxiety and negative emotions, and improve their positive emotions.

Keywords: Mental health; Health education; COVID-19; Negative emotions

Introduction

Corona Virus Disease 2019 (COVID-19) has been identified by the WHO as a public health emergency of international concern. COVID-19 threatens humans' life safety and health and brings numerous psychological problems to the public (1). Adolescents are particularly susceptible to psychological problems owing to their

physical and mental development, as well as the double pressure from academic study and the pandemic (2). During the COVID-19 pandemic, adolescents suffer a high level of stress (3), high level of social phobia (4), irritability, Internet addiction (5), sleep issues (6), and other emotional and behavioral problems, among which anxiety



and depression are the most prominent (7-8). Adolescent anxiety and depression during the lockdown period relatively decreased after lockdown was lifted, but remain at a relatively high level (9). Moreover, negative emotions, such as anxiety and depression, may lead to markedly serious psychological problems, including post-traumatic stress disorder (10), suicide tendency and attempts, academic difficulties, and conflicts with parents (9). Adolescents' future growth and development may be negatively affected if measures are not implemented to deal with their psychological stress responses to the pandemic, including their emotional, physiological, and learning problems, as well as parent-child relations.

Various methods have been applied to intervene in different groups of people and alleviate the psychological pressure brought by COVID-19. Alleviating negative emotions and improving mood are insufficient in solving individuals' mental problems and assisting them to return to their original state of mental health. They should also be guided to solve existing problems and enhance their ability to solve problems. Evidently, solution-focused brief therapy (11) is an efficient method to solve problems in the target population. Solution-focused brief therapy considerably focuses on problem solving, and believes that individuals have the ability or potential to solve their own problems.

Through psychological consultation and oral comfort, solution-focused brief therapy encourages individuals to engage in thinking transformation, guides group members to perceive their positive changes, and solves their psychological problems in a targeted manner (12). This therapy has been used to alleviate anxiety, relieve depression, and improve mental health (13-14). Group counseling provides a good platform for the application of solution-focused brief therapy, and that the combination of group counseling and solution-focused brief therapy can achieve superior therapeutic effect (15). Given that group activities can effectively mobilize the initiative and enthusiasm of patients, such an undertaking creates a beneficial environment for the application

of solution-focused brief therapy. Solution-focused brief therapy-based group therapy can reduce anxiety and depression among adolescents (16). Solution-focused brief therapy combined with group counseling can effectively improve the self-identity of epilepsy patients, reinforce their psychological resilience, and promote their expectations (17). In addition, knowledge of COVID-19 was closely related to the anxiety and depression symptoms of adolescents (18). The high proportion of negative information is a risk factor of anxiety in adolescents (19). Therefore, a correct cognition of COVID-19 in adolescents should be formed urgently.

According to the current study's literature review, no research has yet to be conducted in which solution-focused brief therapy-based group intervention is combined with video health education to intervene in adolescents' psychology during the COVID-19 pandemic. Hence, a one-month intervention was conducted on adolescents with anxiety symptoms during the COVID-19 pandemic. The objective was to investigate the effects of solution-focused brief therapy-based group intervention combined with video health education in improving adolescents' negative emotions, anxiety. The end goal is to provide a reference for the exploration and implementation of effective intervention in adolescents' psychological problems during any public health emergency.

Methods

In 2021, open volunteer recruitment was conducted in four communities (i.e., Dasi, Xiguan, Luci, and Gulou) in Fuyang City, Anhui Province, China. The 528 adolescents who volunteered to participate in the study underwent preliminary screening. In particular, they were screened for the first time according to the Self-rating Anxiety Scale (SAS) that was filled in anonymously. In accordance with the SAS scoring standard, those with scores of ≥ 50 were initially identified to have depression.

Among the 528 adolescents who underwent preliminary screening, 130 with anxiety symptoms obtained scores of ≥ 50 (%). After the unified description and explanation of the experiment by the research team, 126 adolescents with anxiety symptoms voluntarily participated in the intervention. The 126 participants were randomly divided into the intervention and control groups (63 in each group). During the intervention, 3 and 5 participants withdrew from the intervention and control groups, respectively. Overall, the intervention and control groups had 60 and 58 participants, respectively. The participants had no differences in age, gender, grade, academic achievement, family economy, and concern with the pandemic before the intervention (Table 1).

Prior to this experiment, consent was obtained from community managers, volunteer guardians, and the actual volunteers. Prior to the enrollment, all participants were informed of the purpose, main contents, and precautions of the study through the aforementioned publicity channels, and all of them participated in the study voluntarily. This study strictly abided by ethical settings and was approved by the Medical Ethics Expert Committee of the Health Commission of Anhui Province. The participants signed an informed consent letter and were informed that they could withdraw from the study at any time. All data were held in strictest confidence during the study.

Research tools

1) Self-rating Anxiety Scale (SAS) (20): The SAS scale was compiled by Zung (20) and has 20 items scored with 4 grades. The test score is multiplied by 1.25 as the standard score; hence, the highest score is 100. Those with scores of < 50 points have no anxiety; 50–59 points, mild anxiety; 60–69 points, moderate anxiety; and ≥ 70 points, severe anxiety. Cronbach α of the scale is 0.83.

2) Positive and Negative Affect Scale (21): This scale was compiled by Watson et al (22) and revised by Huang et al (21). Among the 20 scale items, 10 items each are used to evaluate positive and negative emotions, thereby constituting the

positive and negative affect subscales, respectively. Each item is rated from the highest score of 5 points to the lowest of 1 point. The total score is 20 to 100 points, and the total score of each subscale is 10 to 50 points. A higher score suggests higher level of corresponding emotion. The consistency coefficients of the two subscales (i.e., positive and negative affects) and total scale are 0.85, 0.83, and 0.82 respectively.

Intervention method

This study was designed as a randomized controlled experiment. In the intervention group, solution-focused brief therapy-based group intervention was conducted in combination with a short video health education related to the pandemic. The control group was given only routine health education in the community and did not receive any experimental treatment, but stayed in the state of natural growth. The intervention and control groups were measured before and after the one-month intervention using the following measurement tools: Positive and Negative Affect Scale and SAS.

Solution-focused brief therapy-based group intervention was the first part of the intervention conducted in the intervention group. 1) Timing: The intervention was conducted for one month, four times each week, every two days (e.g., Monday, Wednesday, Friday, and Sunday). The intervention was arranged between 7:00 pm and 8:00 pm, for 20 minutes each time, to avoid affecting the daily life activities of the members. 2) Quality control: The two group leaders underwent a series of trainings on solution-focused brief therapy-based short-term psychological counseling and group psychological counseling. The research team had over 5 years of experience in group counseling and individual psychological counseling. 3) Intervention content: With the belief that individuals have the ability or potential to solve their own problems, solution-focused brief therapy focuses on the discussion of problem-solving and to the positive functions of “problems.” Therefore, effort was exerted in this intervention of solution-focused brief therapy mainly to explore the advantages of adolescents during the

COVID-19 pandemic and encourage them to make minor changes, rather than to highlight the negative emotions and events during the COVID-19 epidemic. 4) Specific steps: An intervention group communicating primarily through mobile phone message or telephone call was established. Members of the intervention group received the questions of solution-focused brief therapy in the form of mobile phone messages. Examples of these questions were as follows: What do you expect to obtain from this one-month interview during the COVID-19 pandemic? What do you want to improve the most? Can you recall the aspects you were most satisfied with or made improvement in for the last 15 days? Can you share the events that made you happy today? Who else helped you in these happy events? The members sent their answers to the research team in the form of mobile phone message. The instructors gave short and positive feedback to the members' answers, including positive guidance, such as inspiring the members to acknowledge their own advantages and resources or affirming and praising their positive changes. If there was no doubt, then the daily Q&A would be ended.

Video health education related to the pandemic was the second part of the intervention conducted in the intervention group, in combination with solution-focused brief therapy. The control group students received routine health knowledge education without any additional intervention. Apart from routine health knowledge education, the intervention group was also given health education through video playing. The short education videos were made by the research team in cooperation with the community health education department and the community health and epidemic prevention staff according to the physical and mental development characteristics and knowledge reserve level of 7 to 12-year-old students and the pandemic. Moreover, common, prevalent, and important infectious diseases of this age group were incorporated to the design and development of the videos. The diseases included in this study were COVID-19, influenza, varicella, and norovirus infectious diarrhea. The

intervention was conducted for four times within one month. A disease type was broadcast between 7:00 pm and 7:40 pm every Saturday.

Statistical methods

Data were analyzed using SPSS 18.0 (Chicago, IL, USA) statistical software. Quantitative data were expressed as mean \pm standard deviation. Independent sample *t*-test was used for comparison between two groups of means. Paired *t*-test was used for comparison within a group. Qualitative data were expressed as the number of cases. Chi square test or rank sum test was used for comparison between groups. The difference was statistically significant at $P < 0.05$.

Results

General information

Before the intervention, there were 63 participants in either the intervention or control group. After the intervention, 3 and 5 participants were excluded in the intervention and control groups, respectively. The final total participants were 60 and 58 in the intervention and control groups, respectively. Table 1 shows no statistical significance among the participants in terms of age, gender, family economy, and concern with the pandemic. This result suggests that the two groups were comparable in demographic information.

Comparison of SAS before and after intervention

Table 2 shows that there was no statistical difference in the SAS score between the two groups before the intervention ($t=00.941$, $P=0.348$). After the one-month intervention, there was a decrease in the SAS score of each group, and their respective difference with the pre-intervention level was statistically significant ($P<0.001$). The results show that the effect was better in the intervention group than in the control group ($t=2.953$ and 4.324 , $P<0.05$).

Table 1: Comparison of demographic information of the participants

<i>General information</i>		<i>Intervention group (n=60)</i>	<i>Control group (n=58)</i>	<i>t/χ²/Z</i>	<i>P</i>
Age (yr)		15.18±1.37	15.24±1.38	0.229	0.819
Gender	Male	31	31	0.038	0.846
	Female	29	27		
Family economic	Very nice	6	5	0.396	0.692
	Quite good	15	15		
	Moderate	19	23		
	Poor	12	9		
	Very poor	8	6		
Epidemic concern	Very concerned	12	9	0.069	0.945
	More attention	11	13		
	Moderate	19	20		
	Less attention	11	12		
	Not concerned	7	4		

Table 2: Comparison of SAS before and after intervention

<i>Group</i>	<i>Before inter- vention</i>	<i>After inter- vention</i>	<i>Difference before and after intervention</i>	<i>Intra group compari- son p value</i>
Intervention group (N=60)	63.58±9.45	56.45±10.41	7.13±5.59	<0.001
Control group (N=58)	65.22±9.48	61.88±9.52	3.34±3.7	<0.001
<i>t</i>	0.941	2.953	4.324	
<i>P</i>	0.348	0.004	<0.001	

Comparison of positive and negative affect scores before and after intervention

Table 3 shows that there was no statistical significance between the two groups in the positive and negative affect scores before the intervention ($t=0.077$ and 0.874 , $P=0.939$ and 0.384). After the intervention, there was an increase in the positive affect score of each group and a decrease in the negative affect score of each group, and their respective difference with the pre-intervention level was statistically significant ($P<0.01$). From the comparison between the two groups in the

positive and negative affect scores after the intervention as well as their respective changes before and after the intervention, it can be seen that after the intervention, the intervention group had a higher positive affect score and a lower negative affect score than the control group, and the changes of the intervention group in the positive and negative affect scores were greater than those of the control group. The corresponding difference was statistically significant ($P<0.01$), indicating that the intervention effect was better in the intervention group than in the control group.

Table 3: Comparison of positive and negative affect scores before and after intervention

<i>Index</i>	<i>Group</i>	<i>Before in- tervention</i>	<i>After inter- vention</i>	<i>Difference before and after interven- tion</i>	<i>Intra group comparison P value</i>
Positive emotion	Intervention group (N=60)	27.13±6.89	32.57±6.99	5.43±3.25	<0.001
	Control group (N=58)	27.03±7.11	29.47±7.04	2.47±1.82	<0.001
	<i>t</i>	0.077	2.400	6.087	
	<i>P</i>	0.939	0.018	<0.001	
Negative emotion	Intervention group (N=60)	24.50±4.53	19.03±3.5	5.47±3.3	<0.001
	Control group (N=58)	23.69±5.51	21.81±5.34	1.95±1.65	<0.001
	<i>t</i>	0.874	-3.351	7.286	
	<i>P</i>	0.384	0.001	<0.001	

Discussion

The results of this study show that after the one-month intervention, there was a decrease in the ASA score of each group, but the decrease of the intervention group was more obvious than that of the control group, suggesting a better effect. It can be seen that solution-focused brief therapy in combination with video health education can alleviate the anxiety symptoms of adolescents during the epidemic. It also demonstrates that the anxiety of adolescents can be naturally relieved over time. Therefore, the intervention in adolescents should adhere to the developmental principle and improve their self-regulation ability, rather than emphasize pathology or make it difficult for them to use available resources to solve the existing problems. During the COVID-19 period, isolation, lockdown and online courses have led to changes in the learning environment and learning methods and interruption in the normal life and behavior patterns (23). Meanwhile, under the influence by public opinions about the epidemic, adolescents are more likely to have more anxiety emotion.

Solution-focused brief therapy adopted in this study aimed to guide adolescents to see that they have the ability to solve problems, and give positive responses to their answers; produce positive cognition and actions among adolescents assist them to perceive the possibility of change from

small changes and improve their self-confidence. In addition, joining the group composed of peers in the same satiation can eliminate adolescents' worries and negative ideas and encourage them to share their thoughts more actively. Besides, video health education was also incorporated into this study, because excessive immersion in negative information related to the epidemic aggravate negative emotions such as worry and fear. These negative emotions further reduce individuals' cognitive ability, weaken their competence to deal with the epidemic objectively and rationally, and thus exacerbate their psychological stress reactions such as anxiety and fear (24). The inclusion of video health education helps adolescents form correct cognition and correct understanding of the epidemic, so as to prevent adolescents from excessively immersing worry, fear and other negative emotions from negative information or imagination due to their failure to correctly assess the risk information of the epidemic or distinguish the authenticity of the information. More education about the COVID-19 has also been found to reduce anxiety among adolescents (25). The results of this study show that after the one-month intervention, the increase in the positive emotions and the decrease in the negative emotions of the intervention group were higher than those of the control group were. This suggests that solution-focused brief therapy in combination with video health education can effectively alleviate the negative emotions and improve the

positive emotions of adolescents during COVID-19. Positive emotions bring a subjective pleasing experience, broaden the scope of an individual's thoughts and behaviors, encourage the individual to find new thinking and behavior patterns, and help the individual better deal with negative events (26). On the contrary, negative emotions inhibit an individual's physical and mental development (27).

Solution-focused brief therapy-based group intervention, first of all, puts adolescents in the leading position of problem-solving, leads them to realize that the problems encountered are temporary and can be solved rather than pathological and unchangeable, gives them the awareness that they have the ability to solve these problems. Therefore, adolescents would change their thinking mode and take the perspective of problem solving. For example, they may perceive some benefits of staying at home during the epidemic, such as having more opportunities to get along and communicate with parents. They can treat things around them with a positive attitude, get affirmation to the changes they make, improve their subjective consciousness of making change and enhance their self-healing competence. Secondly, adolescents can also get encouragement and support from others during intervention activities, thus obtaining another kind of social support. Because of the policy of at-home isolation, it is difficult for adolescents to reach their peers or have communication with friends.

The reduction in friend support is a risk factor for negative emotions among adolescents (28), and that less social support is significantly related to high anxiety and high depression (29). Moreover, in-group activities, adolescents can freely talk to other individuals who have similar experience with them, are inspired to share their own emotional problems, and thereby obtain assistance to solve these problems accurately and quickly. Meanwhile, adolescents can also perceive their own value in the process of helping others. These benefits are all conducive to reducing their negative emotions, improving their positive emotions and promoting their mental health.

Conclusion

Solution-focused brief therapy was combined with video health education in this study to conduct a one-month intervention in adolescents with anxiety symptoms during the COVID-19 period. Solution-focused brief therapy in combination with video health education can effectively alleviate adolescents' anxiety and negative emotions, improve their positive emotions. This finding has certain practical significance and reference value since it provides a new way of thinking on how to improve the mental health of adolescents during the epidemic.

Ethical considerations

Ethical issues (Including plagiarism, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

Acknowledgements

This work was supported by Anhui Social Science Innovation and Development Research Project (2020cx222), Scientific Research Project of Fuyang Normal University (2020kyqd0025) and Fuyang Normal University Industry University Research Project (2020fxghk4).

Conflict of Interest

The authors declare that there is no conflict of interests.

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