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Effects of sandplay group therapy on children at risk of suicidal ideation

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Abstract

Background The recent surge in suicide rates of children and adolescents in Korea has become a social problem. Suicide and suicide attempts begin in children and adolescents and continue to progress, leading to serious suicide and suicide attempts, so early intervention is essential. This study investigated the effects of group sandplay therapy on depression, anxiety, and self-esteem in children at a risk of suicidal ideation.

Methods This was a non-randomized, controlled trial. After recruiting 63 subjects at risk for suicidal ideation through convenience sampling based on a preliminary survey, the subjects were divided into a sandplay group therapy (SGT) group and a control group. The control group did not receive interventional therapy, whereas the SGT group received 10 sessions of sandplay therapy once a week, 40 min each. The clinical assessment instruments used were the Suicidal Ideation Questionnaire-Junior (SIQ-JR), Center for Epidemiologic Studies Depression Scale for Children (CES-DC), Revised Children's Manifest Anxiety Scale (RCMAS), and Rosenberg's Self-Esteem Scale (RSES). Statistical analysis was performed using IBM SPSS version 25.0, and multivariate analysis of variance (MANOVA) was used.

Results Sandplay group therapy significantly reduced depression and anxiety in the SGT group at risk of suicidal thoughts compared to the control group, and also significantly improved self-esteem.

Conclusion 10-week sandplay group therapy was effective in reducing depression and anxiety in children and improving self-esteem in children at risk of suicidal thoughts. The results of these interventions, first attempted in Korea, suggest that sandplay group therapy in schools can be an effective intervention for children and adolescents at risk of suicide. (Clinical Research Information Service (CRiS) of Republic of Korea, Registration Number: KCT0010738, Registration Date: 2025.07.09.)

Keywords Suicide, Sandplay group therapy (SGT), Child, Intervention effect

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Introduction

Suicide among children and teenagers is increasing every year, to the extent that it is becoming a major social problem [1]. Sandplay therapy provides an opportunity to express repressed emotions and the inner self that is difficult to articulate verbally. Through the therapist's unconditional acceptance, empathy, and support, clients are encouraged to freely express their unconscious thoughts, emotions, and feelings. It is believed to offer a chance for insight into oneself, facilitating positive reconstitution and promoting growth [2]. According to Statistics Korea, suicide was the number one cause of death among children and adolescents aged 10-19years [3]. According to recent national data from 2019, 18.8% of adolescents have considered attempting suicide, 15.7% have made a suicide plan, and 8.9% have attempted suicide in the past year [4]. The average suicide rate for children and adolescents in OECD (Organization for Economic Co-operation and Development) member countries is 6.0, while South Korea has 11.7, which is 2.0 times higher than the OECD average [5].

The prevalence of suicidal ideation among adolescents worldwide has been reported to range from 10.9–37.9% [6], with the prevalence among American adolescents reported between 14.5% and 19% [7]. In our country, according to the Youth Health Behavior Online Survey, 19.6% of adolescents have considered suicide [8]. While suicide itself may seem like a highly personal and antisocial issue, it ultimately leads to significant social and economic losses, and is also a result of the societal problems we face. Suicidal ideation was defined as self-reported thoughts on committing suicide [9]. Suicidal ideation is the starting point of the continuous process from suicide attempt to suicide [10]and is a significant predictor of suicide [11]Suicidal behavior occurs more often in people who have experienced suicide attempts, and empirical research confirms that people who have experienced more suicidal thoughts attempt suicide [12]. According to Statistics Korea, the suicide rate among children and adolescents increased from 4.2 per 100,000 people in 2015 to 11.7 in 2020. Notably, an average of 48.3 individuals aged 10 to 14 commit suicide in Korea every year, indicating that the suicide phenomenon is expanding to children [13]. Children may be at an increased risk of suicide because of their limited ability to solve problems and their lack of adaptation strategies in stressful situations [14]. When depression and anxiety persist, it is difficult for children to acquire social skills, which can hinder essential development and lead to suicidal thoughts [15]. In severe cases, childhood anxiety can lead to drug addiction, depression, dropping out of school, suicide, and other psychiatric disorders [16]. Also, low self-esteem in children is associated with poor health, deviant social behavior, smoking, drug abuse, low academic achievement, depression, and suicide [17].

Sandplay therapy can be used as a counseling tool for school-age children experiencing difficulties with verbal expression [18]. It has been widely used to treat children with emotional disorders [19]. Sandplay therapy has been conducted in local communities, disaster-stricken areas, and clinical settings such as schools and hospitals, and multiple studies have verified its effects on various mental health problems such as depression, anxiety, ADHD, aggression, and low self-esteem [20]. Since the 2000s, several systematic and scientific studies have verified the effectiveness of sandplay therapy [21]. The commonalities between individual sand play therapy and group sand play therapy all help with inner emotions, expressions of unconsciousness, self-understanding, and emotional regulation [22]. However, individual sand play therapy was particularly effective in cases of trauma or difficult verbal expression [18], and group sand play therapy was relatively more effective in school violence victims and children suffering from depression, suicidal thoughts, and serious emotional and behavioral problems [23].

Flahive reported that sandplay group therapy is more suitable than individual sandplay therapy for students with behavioral problems at the psychosocial development stage, confirming that group therapy is effective in improving peer relationships and reducing behavioral problems among children who experience social and behavioral difficulties [24].

It can be understood from this study that sandplay group therapy, which involves touching sand, listening to the sound of sand, providing psychological comfort through physical tension relief and the soft texture, and building familiarity with sand, was effective. Li et al. [25], Khojasteh et al. [26], Shin and Lee [27], and Ahn et al. [28], they were observed that sandplay group therapy led to a reduction in depression and anxiety. This outcome is interpreted as a result of improving emotional stability by safely expressing the inner world of thoughts and emotions without any resistance, utilizing symbols within the free and protected space of the sand tray [29].

The research subjects, elementary school students in grades 4 to 6, are at the onset of puberty, a period marked by rapid psychological and physical changes. However, their emotional development remains immature, leaving them prone to considerable psychological conflict. This results in frequent mood swings, a loss of self-control, and a susceptibility to feelings of confusion.

Children lack the mental health coping capabilities, behavioral ability, and cognitive skills compared to adults. Studies of suicide and suicide attempt in children are very rare compared to studies in adults. However, since suicide attempts begin in children and adolescents and continue to progress, and progress to serious suicide

attempts in adulthood, preventive treatment is required early. Therefore, the purpose of this study was to first verify the treatment effect for depression, anxiety, and self-esteem by performing 10 weeks of sand play treatment in children at risk of suicide attempt, and secondly, to verify whether suicide and suicide attempt can be reduced as a result.

Methods

Participants

The subjects of this study were a total of 719 children in 5th and 6th grades of A and B elementary schools in Cheonan, Korea, children with a total score of 23 or higher on the Suicidal Ideation Questionnaire-Junior(SIQ-JR) were selected as the suicide risk and target group. Children with intellectual disabilities and severe mental illness were excluded from the study. The sample size of the study was calculated as 72 with a significance level of 0.05 and a power of 0.95 using G*Power program 3.1. Of the 81 subjects with a total score of 23 or higher on the SIQ-JR, 12 refused to participate in the program, 1 was excluded for other reasons, and 68 were finally included in the study. The study participants were assigned to 34 and 34 people in the SGT and control groups, respectively.

In this study, 63 of 68 children who agreed to participate in the program. Among the SGT group, two were excluded because they had not participated in sandplay therapy more than three times, and three were excluded from the control group because they were transferred to other schools. (Fig. 1). No statistically significant differences were found in terms of sex, age, or economic level. Table 1 presents the demographic characteristics.

Procedure

Before the study, the purpose and method of the study were sufficiently explained to all participants, and written consent was obtained from their parents and children. In this study, both the Sandplay Group Therapy (SGT) group and the control group underwent pre- and post-tests over the same period of time. The SGT group consisted of 3 to 4 members each and received therapy once a week for 40 min per session over 10 sessions, whereas the control group did not receive any therapy.

This study was designed as a non-randomized controlled trial. Investigation was conducted from September 2020 to July 2022 at elementary schools A and B in

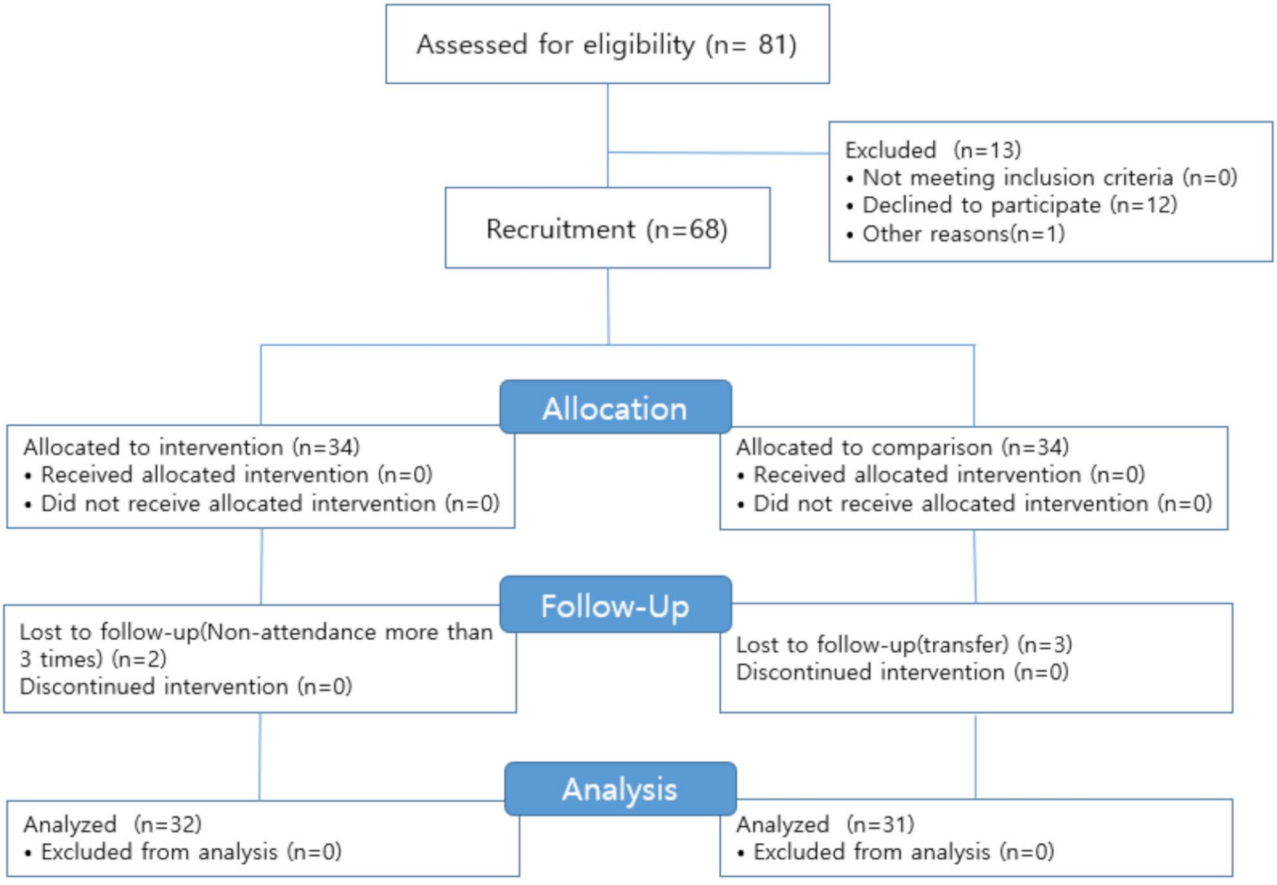

Fig. 1 Flowchart of the study screening process

Table 1 Demographic characteristics in study participants

Variables	SGT ($n=32$)	Comparison ($n=31$)	t/x^2	*P* value
Sex			0.006	0.936
Male	9(28.1)	9(29.0)		
Female	23(71.9)	22(71.0)		
Age	11.34 ± 0.48	11.39 ± 0.46	0.011	0.916
11 age	21(65.6)	19(61.3)		
12 age	11(34.4)	12(38.7)		
Socio economic level			1.343	0.511
Upper level	2(6.3)	4(12.9)		
Middle level	22(68.8)	22(71.0)		
Lower level	8(25.0)	5(16.1)		

Values are presented as mean ± SD or number (%)

SD = standard deviation, SGT = Sandplay Group Therapy

Table 2 Stage-wise goals and curriculum of the SGT intervention

Stage	Session	Objective	Sandplay therapy activity
Departure	1	Becoming familiar with sand	Introduced to sandplay therapy and freely expressing emotions that come to mind while touching the sand
Encountering and expressing emotions	2	Recognizing emotions	Touching the sand with eyes closed and feel various kinds of emotions including sadness and joy, and expressing them in the sand tray
	3	Recognizing emotions related to events	Recalling events and situations experienced in the past and freely expressing the feelings felt in those situations
Conflict and struggle	4	Experiencing negative emotions	Facing negative emotions such as conflict and struggle and freely expressing them
	5	Encouraging oneself in the face of adversity	Imagining a hero overcoming hardships and suffering and creating a scene describing the hero
Reflecting on relationships	6	Feeling gratitude towards family	Expressing the feelings that come to mind while thinking of family members and freely expressing them in the sand tray
	7	Feeling gratitude towards friends	Expressing the feelings that come to mind while thinking of friends and school and freely expressing them in the sand tray
Self-understanding and acceptance	8	Examining both positive and negative aspects of oneself	Reflecting the image of the self in the sand tray, including both positive and negative sides
	9	Reflecting on one's current self	Creating a sand tray scene for mind-centering by reflecting on the sand tray scenes created so far
Re-creation (integration)	10	Thinking about my future self	Reflecting the image of a grown-up and mature self by imagining the new and future self-image

Cheonan, South Korea, using a sandplay group therapy. The sandplay group therapy program was based on "Sandplay Therapy: A Step-by-Step Manual for Psychotherapists of Diverse Orientations" by Boik and Goodwin [29] and reconstructed by Kwak et al. [21] to fit the characteristics of Korean schools. (Table 2).

All the methods were performed in accordance with relevant guidelines and regulations. Before the program, the researchers held several meetings with sandplay therapists between elementary schools A and B to adjust the experimental environment. A pediatric mental health specialist provided clinical supervision to the patient. A certified Korean sandplay therapist with a master's degree in psychology and more than 8 years of clinical experience conducted the therapy. Participants were recruited through convenience sampling, and were divided in two groups: SGT (Sandplay Group Therapy) group and the control group. Before the study, the purpose and method of the study were sufficiently explained to all participants, and written consent was obtained from their parents (check, children under 18 could not give written consent by themselves). Both groups underwent pre- and post-tests during the same period. The SGT group consisted of 3 to 4 members each and received therapy once a week for 40 min per session over 10 sessions, whereas the control group did not receive any therapy.(Fig. 1).

Measure

Suicidal Ideation Questionnaire (SIQ-JR) Suicidal ideation was measured using a self-report scale developed by Reynolds [30] and adapted in Korean by Lee et al. [31] that can highly predict suicidal ideation and future suicide attempts. The tool consists of 15 questions evaluated on a 7-point (0–6) Likert scale according to the frequency of suicidal thoughts. The cut-off score was 23 out of a total score of 90. Scores higher than 31 were considered

high-risk, and professional help was requested for these subjects. In the study by Lee et al. [31], the reliability was Cronbach α = 0.92. In this study, the reliability was Cronbach'sα = 0.94.

Center for Epidemiologic Studies Depression Scale for Children(CES-DC)is a self-report scale developed by Faulstich et al. [32]. It consists of 20 items about current depressive symptoms, rated on a 4-point (0–3) Likert scale and divided into four categories: depressive emotion (7), body dissatisfaction (7), positive emotion (4), and interpersonal relationships (2). A total score of 27 or less is normal, 28 to 38 is mild to moderate depression, and 39 and above indicates a suspected depressive disorder that requires professional help. In the study of Faulstich et al. [24], the reliability was Cronbach α = 0.84. In this study, the reliability was Cronbach'sα = 0.92.

Revised Children's Manifest Anxiety Scale (RCMAS) Which is the children's version of Taylor's [33]Manifest Anxiety Scale for Adults and was revised by Reynold et al. [34] in 1978. It is the most widely used self-report scale to evaluate anxiety disorders in children and adolescents aged 0-19years. The tool was designed to assess various anxiety-related symptoms, and consisted of 37 questions to which the participant answered either yes (1) or no (0). Items 4, 8, 16, 24, 28, 32, and 36 are reverse-scored. A total score of 25 or less indicated normal anxiety, 26 to 33 indicated mild to moderate anxiety, and 34 and above indicated a suspected anxiety disorder. In the study of Reynold et al. [34], the reliability was Cronbach α = 0.79. In this study, the reliability was Cronbach'sα = 0.78.

Rosenberg Self-Esteem Scale (RSES)Self-esteem was measured using a scale developed by Rosenberg [35]and adapted by Jon [36]. The RSES is a self-report measure of how much one accepts, likes, and values themselves. A total of 10 questions (divided into 5 positive and negative questions each) were evaluated on a 4-point (1–4) Likert scale. Higher total scores indicate higher self-esteem. Items 3, 5, 8, 9, and 10 were reverse-scored. In the study of Jon [36], the reliability was Cronbach α = 0.92. In this study, the reliability was Cronbach'sα = 0.83.

Data analysis

The collected data were analyzed using IBM SPSS Statistics 25.0. Cronbach's alpha was used to measure the internal reliability of the questionnaire, and Student's t-test was used for demographic analysis. A preliminary test was conducted between the SGT and control groups to ensure homogeneity, and multivariate analysis of variance (ANOVA) was used to test both the interaction and main effect between the two groups.

Ethics statement

This study was approved by the Institutional Review Board of Dankook University (DKU 2020-03-004-003).A sufficient explanation of the purpose of this study was provided to the children and their parents who participated in the study, and written consent was obtained according to the procedure before conducting the study.

For studies involving human participants who were minors (under 18 years of age), written consent was obtained from the subjects and their parents or/or legal guardians. Participants were informed that they could withdraw from the study at any time according to their wishes without any disadvantage to them. It was explained that if participants experienced emotional discomfort or stress during the study, they could be referred to a medical institution and provided with psychological counseling. Furthermore, it was clarified that the research data would not be used for any purposes other than those of the study.

Results

Stratified analysis by gender was conducted, but no significant differences were found.

Homogeneity test of dependent variables between SGT and comparison group

Table 3 shows the results of the preliminary homogeneity test between the SGT and control groups. The results showed no statistically significant differences between the groups.

Comparison result of SGT mean difference score at 10 weeks for depression, anxiety, and self-esteem

Table 4 shows the results of the SGT and control group analyses.

In the results of the multivariate analysis of variance (ANOVA), it was found that depression had a significant difference between the SGT and control groups [F = 13.776, *P* <.001], before and after therapy within the

Table 3 Homogeneity test of dependent variables between sandplay group therapy group and comparison group

Dependent variable groups	SGT group (*n* = 32)	Comparison group (*n* = 31)	t	*P* value
CES-DC	34.97 ± 9.917	32.58 ± 7.624	1.069	0.289
RCMAS	25.41 ± 5.229	26.29 ± 3.090	− 0.820	0.416
RSES	22.63 ± 5.540	24.19 ± 3.919	-1.301	0.199

CES-DC = Center for Epidemiological Studies-Depression Scale Children, RCMAS = Revised Children's Manifest Anxiety Scale, RSES = Rosenberg self-esteem scale

Values are presented as mean ± SD

SD = standard deviation, SGT = Sandplay Group Therapy

Table 4 Effect of SGT on the outcome variables using MANOVAs ($n=63$)

Variables	Group (n)	(Mean ± SD)		Between groups F(p)	Within group F(p)	Interaction effect F(p)
		Pre	Post			
CES-DC	SGT (32)	34.97 ± 9.917	17.06 ± 8.088	13.776***	82.562***	101.770***
RCMAS	Comparison (31)	32.58 ± 7.624	33.52 ± 7.641	25.247***	30.491***	31.397***
	SGT (32)	25.41 ± 5.229	16.59 ± 6.983			
RSES	Comparison (31)	26.29 ± 3.090	26.35 ± 4.882	1.253***	14.497***	25.865***
	SGT (32)	22.63 ± 5.540	27.56 ± 6.085			
	Comparison (31)	24.19 ± 3.919	23.48 ± 3.863			

CES-DC = Center for Epidemiological Studies-Depression Scale Children, RCMAS = Revised Children's Manifest Anxiety Scale, RSES = Rosenberg self-esteem scale
SD = standard deviation. SGT = sandplay group therapy
*$P<.05$, **$P<.01$, ***$P<.001$

SGT and control groups [F = 13.776, $P<.001$], and in the interaction between the two groups [F = 101.770, $P<.001$].

Anxiety had a significant difference between the SGT and control groups [F = 25.247, $P<.001$], before and after therapy in the SGT and control groups [F = 30.491, $P<.001$]. There was also a significant difference of the interaction between the two groups [F = 31.397, $P<.001$].

Self-esteem had a significant difference between the SGT and control groups [F = 1.253, $P<.001$], before and after therapy within the SGT and control groups [F = 14.497, $P<.001$], and in the interaction between the two groups [F = 25.865, $P<.001$]. Figure 2 shows a graph of the average differences in depression, anxiety, and self-esteem between the SGT and control groups. (Tables 3 and 4) (Fig. 2).

Discussion

This study investigated the effect of sandplay group therapy on children at risk for suicidal ideation.

The main findings are as follows.

First, sandplay group therapy was found to be more effective in reducing depression and anxiety in the SGT group than in the control group among children at risk of suicidal ideation. Many previous studies have shown that sandplay group therapy helps to reduce depression and anxiety in children. Keivani et al. [37] reported that sandplay group therapy significantly reduced depression and anxiety among 24 preschool children. Li et al. [25] found that sandplay therapy significantly reduces depression and anxiety in children with systemic lupus erythematosus. Kim and Kim [38]administered sandplay group therapy to children with internalized problem behaviors, and reported that the intervention group showed a significant decrease in depression and anxiety compared with the control group. Sandplay group therapy also showed positive effects on adolescents. In a study by Park et al. [39] on middle school students who were struggling with interpersonal relationships, emotional problems, and adjusting to school, the researchers found that students' depression and anxiety decreased after receiving sandplay group therapy. These results indicate that sandplay group therapy is effective in reducing depression and anxiety, which is consistent with the results of this study. However, this result is different from the results of the study by Flahive and Ray [24], who reported that there was no significant difference in the reduction of depression in sand play group therapy conducted on 4th and 5th grade elementary school students despite the fact that the treatment methods were consistent. It was assumed that the children's uncooperative attitude and emotional changes were not recognized. Sandplay group therapy provides emotional stability to clients by enabling them to safely express their inner world on a sand tray (a free and protected space) [22]. Sandplay allows people to safely express their feelings and thoughts, which can be difficult to express in language, through symbols and helps them develop a positive attitude and relieve their depression and anxiety by opening up among group members in a comfortable and natural atmosphere.

Second, sandplay group therapy was found to be more effective in improving self-esteem in the SGT group than in the control group of children at risk of suicidal ideation. In terms of research on the effect on self-esteem, Lee et al. [40] conducted a study on the impact of sandplay therapy in group counseling on 32 children aged 11 years and found that it was a valuable intervention to enhance children's self-esteem. Shen and Armstrong [41] administered sandplay group therapy to 18 young adolescent girls (age 12 years) with low self-esteem and reported that their self-esteem improved. Kwak et al. [21] reported increased self-esteem and a significant decline in depression after providing group sandplay counseling for 113 elementary school students. Kim [42] found that sandplay therapy had a positive effect on self-esteem in infants who exhibited maladaptive behaviors due to low self-esteem. These findings were consistent with those of the present study. However, this is a different result from the research result of Ahn et al. [43], who conducted 8 sessions of sand play group therapy for high school students. It was estimated that there are limitations to the short 8-session session for personality changes such as self-esteem. Sandplay therapy helps children express

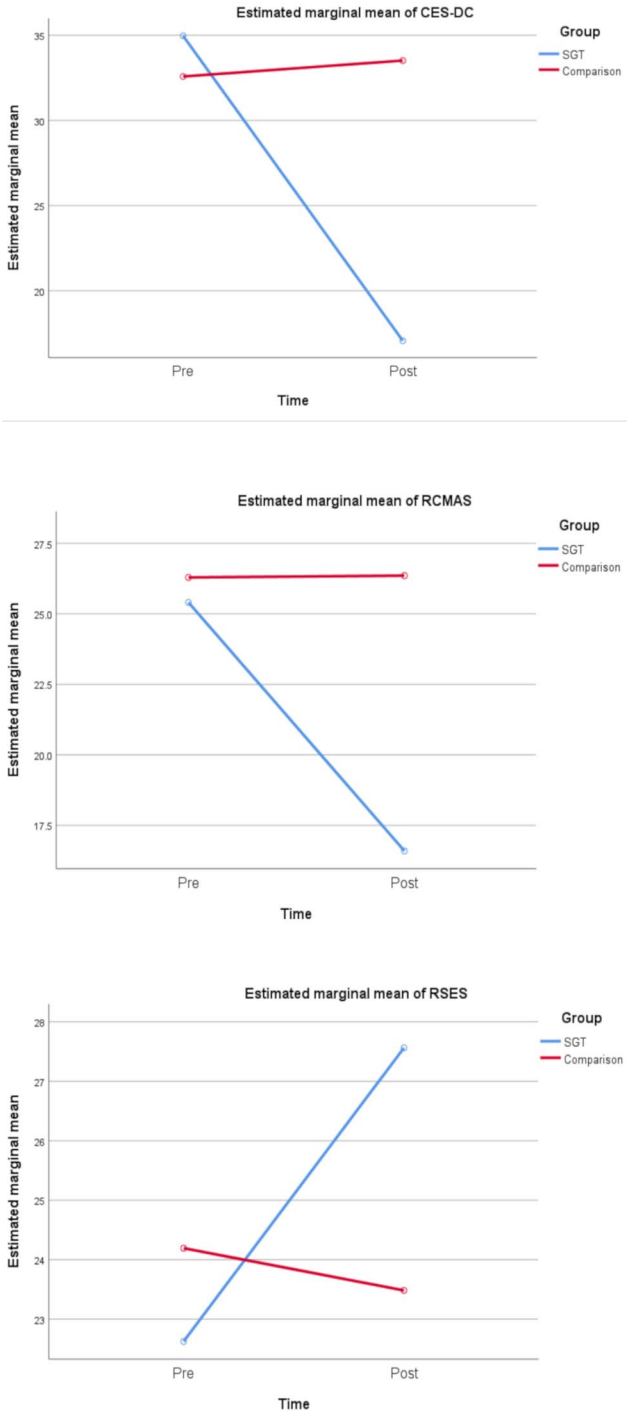

Fig. 2 Chart of average differences in depression, anxiety, and self-esteem

themselves through free and voluntary activities in a trusting relationship between the therapist and the child. Children unfold their inner world in to their own space, the sand tray, and realize that they are valuable by strengthening their ego through creative activities. Participants in the sandplay group therapy experienced acceptance and empathy by talking about and supporting similar experiences among group members [44]. These experiences seemed to provide psychological stability and enhance self-esteem.

In addition, the average of suicide ideas did not change in the control group, but there was a significant difference in the average of suicide accidents in the intervention group.

Suicidal ideation is a severe problem that can lead to suicidal behavior in children with limited problem-solving abilities [1]. However, there is still a lack of social concern or awareness regarding children's suicidal ideation. When most children have suicidal thoughts, they try to express their feelings, such as despair, loss of hope, and anger, to avoid uncertain thoughts about death or pain rather than intending to commit suicide [45]. Suicidal thoughts and attempts are help-seeking behaviors that arise from experiencing difficulties [46]. Although the rate of suicidal thoughts or suicide attempts among elementary school students that lead to death is not high compared to middle and high school students, these thoughts can be expressed at any time during the growth process because they are inherent in the unconscious, and sandplay group therapy can be an effective intervention for children's emotional problems.

The results of our study are related to both the experience of playing with sand and the role of participants within the therapeutic group. In group sandplay therapy, therapeutic change emerges not only through the symbolic and expressive functions of sandplay itself, but also through interpersonal processes such as mirroring, sharing, and emotional resonance that occur in the group setting. Our intervention was designed to integrate these two elements, and the observed improvements in depression, anxiety, and self-esteem are understood to result from this combined therapeutic mechanism.

This study has several limitations. First, there are limitations to the extent to which the results can be generalized to all children in Korea, as the scope was limited to a small number of schools in a certain area. To generalize the effectiveness of sandplay group therapy, additional studies will be required for children of different ages and regions. Second, all measures in this study were self-reported tools. Incorporating parent and teacher reporting methods to make answers more objective will help improve the reliability of the evaluation. Third, the collected data were evaluated only through quantitative analysis. Incorporating a qualitative analysis, such as observing changes in sand trays and student behavior, will help verify its effectiveness in various respects.

Conclusion

This study confirmed that 10-week school group sand play therapy can significantly improve depression, anxiety, and self-esteem in children and adolescents with

suicidal thoughts, and in the end, it can have a preventive effect in children and adolescents at risk of suicide. This intervention method is a group therapy that can be implemented in schools, and has an equal intervention effect for individual sand play therapy. In Korea, individual sand play therapy has been performed in the past, so this is the first group intervention attempt for suicide risk patients. In the clinical reality where suicide is increasing rapidly, school sand play group therapy could be a new intervention strategy for children and adolescents at risk of suicide. It is also expected that it can be a policy data for suicide prevention in children and adolescents.

Abbreviations

SGT	Sandplay group therapy
SIQ-JR	Suicidal Ideation Questionnaire-Junior
CES-DC	Center for Epidemiologic Studies Depression Scale for Children
RSES	Rosenberg's Self-Esteem Scale
MANOVA	Multivariate analysis of variance
OECD	Organization for Economic Co-operation and Development

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Author contributions
HJS(Heajin Shin) analyzed and interpreted this data, writes first manuscript. OK(Ok Kim) performed the statistics for analysis and interpreted this data. MSK(Min Sun Kim) analyzed and interpreted this data. YIL(Youngil Lee), KMK(Kyoung Min Kim), and DHK(Dohyun Kim) performed interpreted this data. CML(Chang Min lee) and SHS(Se-Hoon Shim) revised this manuscript. MHL(Myung Ho Lim) integrated the analyzed data, writes and revised this manuscript. All authors read and approve the final version of this manuscript.

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Data availability
The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
The research was approved by the Dankook Hospital Ethics Committee (2020-03-004-003). For studies involving human participants who were minors (under 18 years of age), written consent was obtained from the subjects and their parents or/or legal guardians. All participants were informed that participation was voluntary and provided written, informed consent. Because this research involving human participants, human material, or human data, we have been performed in accordance with the Declaration of Helsinki. We confirmed that all methods were carried out in accordance with relevant guidelines and regulations. No competing interests.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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