

THE INFLUENCE OF USE OF POP-UP BOOK MEDIA ON THE MENTAL HEALTH OF SCHOOL-AGE CHILDREN AT THE FOUNDATION OF SUMATRA RINDANG

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ABSTRACT

Orphans are a special group of children who are generally marginalized and vulnerable to mental disorders. Efforts that can be made are to provide education about the importance of maintaining mental health as an effort to improve mental health. So that education can be easily understood by school age children, education needs to be delivered using varied media, namely pop-up book media because pop-up books provide surprises on every page which will make the story even more real. This research aims to determine the effect of using pop up book media on the mental health of school-aged children. This research is a quasi-experimental quantitative research using a pretest-posttest control group design approach with 20 respondents divided into 10 intervention groups and 10 control groups. Data measurement with the SDQ instrument. Univariate data analysis using frequency distribution. Bivariate analysis uses paired t-test. The results of mental health research after being given pop-up book media were that in the intervention group, 10 respondents were in the normal category (100%) while in the control group 8 respondents were in the abnormal category (80%) and 2 respondents were in the borderline category (20%). which was tested using the paired t-test, the p-value was 0.001 or $p < 0.05$. This shows that there is a significant difference in mental health before and after being given education using pop up book media. There is a significant influence between mental health before and after being given pop-up book media at the Sumatra Rindang Foundation. It is hoped that the Sumatra Rindang Foundation can develop pop-up book media for a more interesting and effective learning process.

Keywords : Mental Health, Pop up Book, School Age Children

INTRODUCTION

Childhood is an important period for the overall development of children. Children are a gift from God who must be cared for, educated, cared for and all their life needs met. There are several factors that can cause children's basic needs not to be met, namely poverty, death of parents, inability and negligence of parents in realizing the right to child development, especially in meeting basic mental, physical, social and educational needs.¹ This makes children neglected and experience a less fortunate life journey so that they need care from a social institution called an Orphanage.² The United Nations Children's Agency (UNICEF) noted that there are at least 153 million orphans worldwide. Around 5.2% live in foster care institutions or orphanages.³ Based on integrated social welfare data in 2019, there were 106,406 children living in 4,800 orphanages or child welfare institutions.⁴

Orphans are a special group of children who are generally marginalized and vulnerable to mental disorders.⁵ Orphans often face bad experiences such as loss and sadness due to the loss of parents. Orphans do not have the emotional and physical maturity to cope with psychological trauma and are at higher risk of depression and anxiety disorders.⁶ Even though children get substitute parents (caregivers), the substitute family obtained in orphanages cannot always help the child's mental development.⁷ The United Nations International Children's Emergency Fund (UNICEF) 2021 reported that children are very vulnerable to mental health disorders, where there are many emotional and psychological changes. These

changes in children have an impact on the child's developmental stages, such as problems with physical health, learning at school, and social relationships with peers. If this continues to happen to children, the child's mental condition will be very disturbed and result in mental health disorders in children.⁸

The prevalence of mental health disorders in Indonesia according to the 2018 Basic Health Research (Riskesdas) found that at the age of ≤ 15 years in 2018, 9.8% experienced mental health problems such as symptoms of depression and anxiety.⁹ The results of the Indonesia National Adolescent Mental Health Survey (I-NAMHS) survey showed that one in three children aged 10-17 years in Indonesia had problems with mental health and in the last 12 months had mental disorders and ironically only 2.6% sought professional help for these problems.¹⁰ The results of the Ministry of Health survey showed that 4.3% of boys and 5.9% of girls out of a total of 10,837 children had the desire to end their lives. The data shows the need for special attention to children's mental health so that they will have strong coping later.¹¹ Children need more guidance from adults to bridge children in maintaining and strengthening mental health.¹²

Efforts that can be made are to provide education about the importance of maintaining mental health. The optimal education process for children includes the use of learning aids such as learning media.⁵ The selection of learning media must be appropriate in order to facilitate the learning process, including the use of creative, innovative and interesting learning media such as pop-up book media.¹³ Pop-up books are media materials in the form of books that present moving images and their interactions through the use of paper into a form such as rolls, turns and folds.¹⁴ Providing education to school-age children with pop-up book media can help children learn and strengthen the message they want to convey. By using pop-up book media, mental health material does not seem monotonous or boring. The three-dimensional visual display provides a surprise on every page of the pop-up book that will make the story even more real.¹⁵

The researcher conducted a preliminary study of 10 school-age children at the Sumatera Rindang Foundation. The results showed that 7 children did not know about mental health. On the other hand, the researcher also observed that some of the children among them experienced worrying emotional and behavioral problems. Factors such as lack of attention and affection from the family which can occur for various reasons have had a negative impact on children's mental health. The results of observations of several children showed that they were selfish, liked to disturb other children, got angry easily, said dirty words, felt hopeless, and felt excessively anxious. Some of them also tended to feel inferior, embarrassed when asked and lacked the confidence to be able to accept themselves positively. The purpose of the study was to determine the effect of using pop-up book media on the mental health of school-age children at the Sumatera Rindang Foundation.

METHODS

This study used a quasi-experimental research type using a pretest-posttest control group design in the intervention group and the control group. This study was conducted at the Sumatera Rindang Foundation, Jalan Yulius Usman, Pematang Sulur Village, Telanaipura District, Jambi City. This research was conducted for 1 month in April 2024. The population in this study were all school-age children at the Yayasan Sumatera Rindang, a total of 59 school-age children with a total sample of 20 children. This study used a cluster sampling technique, which means that several groups were randomly selected from the population and then each selected group, or part of them, was taken as a sample. In this study, the instrument used was the Strength and Difficulties Questionnaire (SDQ). SDQ is a measuring instrument or psychological scale for early detection of emotional mental health in children aged 4-17 years. SDQ covers two age groups, namely 4 to 10 years and 11 to 17 years.⁽¹⁶⁾ SDQ contains 25 statement items that can be classified into five categories or aspects of behavior that are

measured, namely emotional symptoms, behavioral problems, hyperactivity, peer relationship problems, and prosocial behavior. Both groups will be given the same pretest, then the intervention group will be given treatment with pop-up book media that is different from the control group which is only given information related to mental health via powerpoint. After the treatment is complete, it is continued with a posttest to determine the difference between the initial and final conditions.

RESULTS

Table 1
Frequency distribution of research respondent characteristics, n=60 respondents

| Characteristic | Intervention Group | | Control Group | |
|----------------|--------------------|------|---------------|------|
| | f | % | f | % |
| Class | | | | |
| 1 SD | 1 | 10.0 | 1 | 10.0 |
| 2 SD | 2 | 20.0 | 2 | 20.0 |
| 3 SD | 1 | 10.0 | 1 | 10.0 |
| 4 SD | 2 | 20.0 | 2 | 20.0 |
| 5 SD | 1 | 10.0 | 1 | 10.0 |
| 6 SD | 3 | 30.0 | 3 | 30.0 |
| Age | | | | |
| 6 years old | 0 | 0 | 1 | 10.0 |
| 7 years old | 1 | 10.0 | 1 | 10.0 |
| 8 years old | 2 | 20.0 | 1 | 10.0 |
| 9 years old | 1 | 10.0 | 1 | 10.0 |
| 10 years old | 2 | 20.0 | 2 | 20.0 |
| 11 years old | 1 | 10.0 | 1 | 10.0 |
| 12 years old | 3 | 30.0 | 3 | 30.0 |
| Gender | | | | |
| Male | 3 | 30.0 | 2 | 20.0 |
| Female | 7 | 70.0 | 8 | 80.0 |
| Child Status | | | | |
| Fatherless | 6 | 60.0 | 7 | 70.0 |
| Motherless | 2 | 20.0 | 2 | 20.0 |
| Poor | 2 | 20.0 | 1 | 10.0 |
| Mental Health | | | | |
| Normal | 0 | 0 | 0 | 0 |
| Threshold | 0 | 0 | 0 | 0 |
| Abnormal | 10 | 10.0 | 10 | 10.0 |

Based on table 1, it shows that the characteristics of the intervention group based on class are the most 6th grade elementary school children (30%) with 3 children aged 12 years (30%). The majority of female gender is 7 children (70%). The majority of children are orphans with a total of 6 children (60%). The majority of mental health is abnormal with 10 children (100%). The characteristics of the control group based on class are the most 6th grade elementary school children (30%) with 3 children aged 12 years (30%). The majority of female gender is 8 children (80%). The majority of children are orphans with a total of 7 children (60%). The majority of mental health is abnormal with 10 children (100%).

Table 2
Pretest frequency distribution of intervention group and control group, n=20

| Mental Health | Pretest Intervention Group | | Pretest Control Group | |
|---------------|----------------------------|----------------|-----------------------|----------------|
| | f | Percentage (%) | f | Percentage (%) |
| Normal | 0 | 0 | 0 | 0 |
| Threshold | 0 | 0 | 0 | 0 |
| Abnormal | 10 | 100.0 | 10 | 100.0 |

Based on table 2, it shows that the mental health of respondents in the intervention group before being given pop-up book media was at an abnormal value of 10 people (100%). While in the control group, the pre-test results were at an abnormal value of 10 people (100%).

Table 3
Frequency distribution of posttest of intervention group and control group, n=20

| Mental Health | Posttest Intervention Group | | Posttest Control Group | |
|---------------|-----------------------------|----------------|------------------------|----------------|
| | f | Percentage (%) | f | Percentage (%) |
| Normal | 10 | 100,0 | 0 | 0 |
| Threshold | 0 | 0 | 2 | 20.0 |
| Abnormal | 0 | 0 | 8 | 80.0 |

Based on table 3, it can be seen that the mental health of the respondents in the intervention group after being given the pop-up book media was at a normal value of 10 people (100%). While in the control group, the posttest results were at the threshold value of 2 people (20%) and the abnormal category of 8 people (80%).

Table 4
The Effect of Pop-up Book Media on Mental Health pre-posttest in the intervention group and control group, n=20

| Variable | Mean | Std. Deviation | Std. Error Mean | p-value |
|------------------------------|-------|----------------|-----------------|---------|
| Pre-test Intervention Group | 27.10 | 5.567 | 1.760 | 0.001 |
| Post-test Intervention Group | 9.60 | 2.119 | 0.670 | |
| Pre-test Control Group | 25.70 | 6.147 | 1.944 | 0.109 |
| Post-test Control Group | 22.90 | 6.064 | 1.917 | |

Based on table 4, it can be seen that the average mental health score from the pretest of the intervention group was 27.10 and the average posttest score was 9.60. In the control group, the average pretest score was 25.70 and the average posttest score was 22.90. The results of the pre-posttest statistical test of the intervention group using paired t-test obtained a p value = 0.001 because the P value <0.05, there is an effect of providing pop-up book media on the mental health of school-age children in the intervention group at the Yayasan Sumatera Rindang. While the results of the pre-posttest statistical test of the control group using paired t-test obtained a p value = 0.109 because the P value > 0.05, it can be concluded that there is no effect of providing pop-up book media on the mental health of school-age children in the control group at the Yayasan Sumatera Rindang.

Table 5
Differences in average mental health after being given pop up book media in the intervention group and control group, n=20

| Variable | Mean Rank | Std. Deviation | Std. Error Mean | p-value |
|--------------------------------|-----------|----------------|-----------------|---------|
| Intervention Group (Post Test) | 9.60 | 2.119 | 0.670 | 0,001 |
| Control Group (Post Test) | 22.90 | 6.064 | 1.917 | |

Based on table 5, it shows that the average value of mental health in the intervention group is 9.60 while the average mental health in the control group is 22.90. These results indicate that the average mental health in the intervention group is lower than the average mental health in the control group. According to the significance value of the hypothesis test results using the independent sample t-test, a sig value of 0.001 is obtained, indicating that sig <0.05 so that Ha is accepted and Ho is rejected. This shows that there is an influence on the intervention group that is given education through pop-up book media and the control group that is only given education through powerpoint.

DISCUSSION

1. Respondent Characteristics

Based on the results of research conducted by researchers at the Sumatera Rindang Foundation, it was found that the characteristics of the intervention group based on class were the most 6th grade elementary school children (30%) with 3 children aged 12 years (30%), while in the control group the most 6th grade elementary school children (30%) with 3 children aged 12 years (30%). In this study, most of the respondents were 12 years old, where children are experiencing many physical, emotional, and cognitive changes. Usually, children experience significant development in social skills, empathy, and understanding of social rules. School-age children learn and build cognitive skills actively. Children begin to understand more complex concepts from various parts of life, including those related to mental health. Children have the opportunity to understand how their emotional and social experiences can affect mental health.

Several previous studies have shown that children with an average age of 12 years tend to experience emotional problems and conflicts with their peers. Several factors that women have cause women to experience emotional problems more often than men. These factors include hormonal problems, brain activity in response to stress (hypothalamic-pituitary-adrenal reactions that tend to be less sensitive), lack of self-confidence, higher levels of interpersonal stressors, trauma and sexual abuse that has been experienced, and issues of gender equality and discrimination. The results of this study are in line with previous research entitled "Determinants of mental health of orphans and orphans at the Child Welfare Institution of Bireuen Regency" showing that children aged ≤10 years when orphaned and orphaned have a risk of experiencing emotional mental difficulties 5.72 times greater than children aged 12 years and over.⁷ According to the results of the study that has been conducted, researchers found that in the intervention group based on gender, the majority of female respondents were more than male respondents, namely 7 children (70%) and 3 male children (30%) while in the control group, the majority of female respondents were more than male respondents, namely 8 children (80%) and 2 male children (20%). This shows that girls have a two to three times higher risk of experiencing mental health problems than boys because girls are more prone to

traumatic experiences. Girls' feelings are more sensitive than boys, so girls tend to lock themselves away or blame themselves after experiencing a bad event. In fact, this traumatic experience can be remembered by girls into adulthood and affect their behavior.⁶

Based on the results of the research that has been conducted, researchers found that the characteristics of the intervention group based on the status of the child were mostly orphans with a total of 6 children (60%), 2 orphans (20%), and 2 dhuafa children (20%) while in the control group the status of the child was mostly orphans with a total of 7 children (60%), 2 orphans (20%), and 1 dhuafa child (10%). This is because children who lose their fathers (orphans) are more susceptible to mental health problems, such as depression, anxiety, or difficulty in social adaptation. Orphans are considered vulnerable because children lose their parents who should provide attention, affection, and protection. Children may have difficulty in meeting basic needs such as food, education, health care, and shelter. In addition, children can also experience emotional and social difficulties due to the loss of a parent.

2. Description of Mental Health before being given pop-up book media

Emotional symptoms are a biological and psychological condition characterized by various actions. Children with emotional and behavioral disorders have complex characteristics and children of the same age often have the same behavior such as many worries, often complain of pain in several body parts and often cry or are unhappy. The results of this study showed that the mental health score of children in the intervention group before receiving education with pop-up book media was 27.10 with a standard deviation of 5,567 and the lowest child mental health score was 21 (abnormal) and the highest mental health score was 34 (abnormal). While in the control group before receiving education was 25.70 with a standard deviation of 6,147 and the lowest child mental health score was 19 (abnormal) and the highest mental health score was 38 (abnormal).

In the control group, the question with the most average answers was question no. 5, namely "often having difficulty controlling anger", eight respondents answered always right (80%) and two respondents answered sometimes right (20%) in the action. These things can happen because children often experience challenges in controlling emotions, including anger. Children may face pressure from various aspects of their lives, including interactions with peers, academic demands, and family dynamics. Lack of skills in managing anger can make them more likely to experience difficulties in certain situations. While the average answer to question number 11, namely "having one or more good friends" one respondent answered sometimes true (10%) and nine respondents answered always true (90%) in this action. This suggests that children may experience challenges in building or maintaining close and meaningful friendships. Influential factors include social dynamics in the school environment or foundation where they interact, as well as individual characteristics such as self-confidence or similar interests with peers.^{14,17}

Based on observations made by researchers to respondents, it was found that children who were included in the intervention group showed an attitude of difficulty concentrating which can be seen from the analysis of the questionnaire as many as 7 children (70%) chose always true and 1 child (10%) chose sometimes true in this action. In addition, some children also showed an attitude of difficulty in controlling anger which can be seen from the questionnaire analysis of 7 children (70%) choosing always right and 2 children (20%) choosing sometimes right in the action. Children in the orphanage also showed an anxious attitude which can be seen from the questionnaire analysis of 7 children (70%) choosing always right and 2 children (20%) choosing sometimes right in the action. In some situations, children also showed an attitude of often fighting with other children which can be seen from the questionnaire analysis of 4 children (40%) choosing always right and 4 children (40%) choosing sometimes right in the action. In the control group, it was found that children showed an attitude of being easily angered which can be seen from the questionnaire analysis of 8 children (80%) choosing always right and 2 children (20%) choosing sometimes right in the action. In addition, children

also often seemed worried which can be seen from the questionnaire analysis of 6 children (60%) choosing always right and 2 children (20%) choosing sometimes right in the action. Some children in the orphanage also show restless attitudes, are too active and cannot stay still for a long time, which can be seen from the questionnaire analysis, as many as 3 children (30%) chose always right and 5 children (50%) chose sometimes right in these actions.

This is very dangerous for children's mental health if they do not receive special treatment and attention. This also has a negative impact on children's development in everyday life. Children are at risk of experiencing cognitive growth disorders, learning difficulties because they cannot concentrate on learning, and experiencing depression if children are unable to get along well with their friends.¹⁸

3. Description of Mental Health before being given pop-up book media

The results of the study showed that the mental health score of children in the intervention group after receiving education with pop-up book media was 9.60 with a standard deviation of 2.119 and the lowest child mental health score was 7 (normal) and the highest mental health score was 13 (normal). While in the control group after receiving education was 22.90 with a standard deviation of 6.064 and the lowest child mental health score was 16 (threshold) and the highest mental health score was 32 (abnormal).

The results of this study were obtained in the intervention group for positive statements that had the highest average answer was question no. 20, namely "often offering to help others", eight respondents answered always right (80%) and two respondents answered sometimes right (20%) in this action. This is because children are often taught the values of empathy and cooperation from an early age. Children learn that helping others is an action that is appreciated and builds good relationships. As for the negative statement in number 2 about "restless, too active, can't stay still for a long time", ten respondents answered incorrectly (100%) in the action. This shows that children tend to be less active or prefer quieter activities, while others are more active and find it difficult to sit still for a long time. Factors such as family environment, daily activities, and interactions with peers and caregivers can affect children's levels of restlessness and activity. This shows that a good understanding of school-age children who are given mental health education with pop-up book media. These questions cover a variety of topics such as anxiety, anger, social involvement, and prosocial behavior. Uniform scores can reflect that children have understood the knowledge and values taught in mental health education, so they answer questions well and consistently.^{19,20}

Based on observations made on children who are members of the intervention group, it can be seen that there are significant positive changes in their mental health. This can be seen from several children who previously showed difficulty concentrating, now the children can concentrate which can be seen from the questionnaire analysis which initially 7 children (70%) experienced a decrease to 1 child (10%) choosing always being right in the action. In addition, several children have also been able to control their anger which can be seen from the questionnaire analysis which initially 7 children (70%) experienced a decrease because none of the children chose always being right in the action. Children in the orphanage also no longer show anxiety which can be seen from the questionnaire analysis which initially 7 children (70%) experienced a decrease to 1 child (10%) choosing sometimes being right in the action. In some situations, children also do not often fight with other children which can be seen from the questionnaire analysis which initially 4 children (40%) experienced a decrease because none of the children chose always being right in the action.

In the control group, it was found that there were positive changes shown by the children. This can be seen from several children who previously showed an attitude of being easily angered, now the children can control their anger which can be seen from the questionnaire analysis which initially 8 children (80%) chose always right decreased to 5 children (50%) chose sometimes right in the action. In addition, the children also no longer seemed worried which

can be seen from the questionnaire analysis which initially 6 children (60%) experienced a decrease because none of the children chose always right, but as many as 8 children (80%) chose sometimes right in the action. Several children in the orphanage also no longer showed restless and overly active attitudes which can be seen from the questionnaire analysis which initially 3 children (30%) decreased to 1 child (10%) chose always right in the action.

Based on the research that has been conducted, there has been an increase in the mental health value of school-age children after being given education using pop-up book media. This education aims to provide information related to mental health to school-age children in order to increase knowledge, maintain health, and improve a person's behavior towards a better direction. (21,22) A pop-up book is a book that has moving parts or has 3-dimensional elements and provides a more interesting story visualization, starting from the appearance of images that can move when the page is opened. (22) Learning to use pop-up books has a positive impact on children, namely being able to interact with the material or stories contained in the pop-up book. In addition, children can be active as actors through observation or touch, so that children do not just read stories or materials presented in pop-up books.²³

4. The influence of pop-up book media on the mental health of school-age children

Based on the results of the study using the Paired t-test statistical test in the intervention group, the P value was obtained = 0.001 ($P < 0.05$) so there is an influence of pop-up book media on the mental health of school-age children at the Sumatera Rindang Foundation. In the control group, the P value was obtained = 0.109 ($P > 0.05$) so there is no influence of powerpoint media on the mental health of school-age children at the Sumatera Rindang Foundation. The analysis was carried out based on the calculation of the distribution of answer scores for positive statements not true = 0, somewhat true = 1, and true = 2. The score for negative statements not true = 2, somewhat true = 1, and true = 0. The results of the analysis on the overall child mental health variable showed abnormal conditions. According to the significance value of the hypothesis test results using the independent sample t-test, the p value was obtained = 0.001 (< 0.05) which indicates that there is a significant difference in the post-test scores of the intervention group and the control group.

Based on the results of research on the mental health of school-age children at the Sumatera Rindang Foundation, it can be concluded that understanding of the developmental tasks of school-age children has increased, as seen from the results of the study, 18 out of 20 participants (90%) can mention the definition of school-age children, 15 out of 20 participants (75%) can mention the developmental tasks of school-age children, 17 out of 20 participants (85%) can mention the stages of psychosocial development of school-age children. Furthermore, understanding of mental health, 18 out of 20 participants (90%) can mention the definition of mental health, 10 out of 20 participants (50%) can mention the characteristics of mental health, 14 out of 20 participants (70%) can mention factors that can affect mental health, 12 out of 20 participants (60%) can mention types of mental health disorders, 16 out of 20 participants (80%) can mention how to overcome excessive anxiety, 17 out of 20 participants (85%) can mention efforts to improve mental health.(7,24) This shows a good level of understanding overall. Although there was variation in the level of understanding among respondents, most of the respondents had a good understanding of the developmental tasks of school-age children and the concept of mental health and efforts to improve it.

In this study, the level of mental health of school-age children increased after being given education using pop-up book media, as seen from a better level of understanding of the concept of mental health, broader knowledge of the types of mental health disorders that children may face, and how to overcome excessive anxiety and efforts to improve children's mental health. In addition, children also learn skills to manage their emotions more effectively, such as how to deal with stress or how to communicate well in expressing their feelings.

In line with the theory that states that through education a person will get more information, there is additional information so that previously unknown material becomes known through the information conveyed during the health education process, this causes a person's level of knowledge to increase.¹⁸ This study is also in line with previous studies which state that pop-up book media can increase knowledge about balanced nutrition for elementary school students, in addition, the attitudes of elementary school students also increase compared to before being treated.²⁵

From the description above regarding the effect of pop-up book media on the mental health of school-age children, the researcher argues that there is a significant difference between mental health before and after being given pop-up book media, indicating that pop-up book media can be used as a learning medium for school-age children to improve mental health. The results showed that there was a difference before and after education through pop-up book media was carried out on school-age children in the intervention group. While in the control group the researcher only provided education through powerpoint. Furthermore, other studies show that pop-up books are identical to children and toys in the form of media containing illustrated stories that have a three-dimensional shape when the book page is opened. Play therapy is one of the techniques that will help reduce emotional tension felt by children. Gradually, the psychological and physiological responses of anxiety will decrease.²⁶

CONCLUSION

Based on the results of the study, it can be concluded that there is a significant influence on the intervention group with p-value = 0.001. There is no significant influence on the control group with p-value = 0.109. According to the significance value of the hypothesis test results using the independent sample t-test, a sig value of $p = 0.001 < 0.05$ is obtained, indicating that there is a significant difference in the intervention group that is given education through pop-up book media. This shows that education using pop-up book media can improve the mental health of school-age children. Furthermore, it is expected to be used as an alternative method for a more interesting and effective learning process so that the Sumatera Rindang Foundation can develop special learning materials designed using pop-up book media.

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