



Gadjah Mada Journal of Professional Psychology (GamaJPP) Vol 11, No 1 (2025), 70–74  
doi:10.22146/gamajpp.105265

## The Role of “Sera & Sora: Menjelajahi Dunia Remaja” E-comic in Reducing Early Marriage Intention Among Adolescents

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(Received 8 March 2025; revised 19 August 2025; accepted 25 August 2025; published 24 September 2025)

### Abstract

Early marriage remains a serious problem in Surakarta City, with a high number of marriage dispensation applications caused by extramarital pregnancy and a lack of reproductive health education. This study examined the effect of the e-comic “*Sera & Sora: Exploring the World of Teenagers*” in reducing early marriage intention. This e-comic is based on the lessons of *Serat Widya Pramana*, which contains comprehensive sexual education based on local wisdom. This quasi-experimental study employed a control group design with dependent pre- and post-test samples. The participants were 34 adolescents aged 15–18 years in Surakarta, who were divided into experimental and control groups. Results from an independent samples t-test showed that reading the e-comic significantly reduced intention to marry early ( $p = 0.017$ ;  $p < 0.05$ ), with average post-test scores for the experimental group being lower (50.41) than for the control group (56.58). These results suggest that e-comics could be an effective intervention for preventing early marriage.

**Keywords:** electronic comic *serat widya pramana*; early marriage intention; adolescents

The phenomenon of early marriage has become a global issue. India has the highest number of child marriages, with nearly 1.5 million girls under 18 getting married (United Nations Department of Economic and Social Affairs, 2022), followed by Bangladesh with a 74.27% rate of similar cases (Rashid et al., 2024), and Nigeria with 42% (Fang et al., 2024). Meanwhile, Indonesia ranks as the fourth-highest in the world, after India, Bangladesh, and China, and the highest in ASEAN (UNICEF, 2023). Data from Badan Pusat Statistik (2024) showed that the prevalence of child marriage remained above the national average of 5.9% in 20 provinces, including Central Java, which reached 6.13%. Early marriage cases in Central Java even recur annually, with 8,700 applications for marriage dispensation recorded in 2021 (Crisna, 2023).

Surakarta is one of the affected areas in Central Java. Despite being designated as a main child-friendly city (KLA) since 2017, Surakarta failed to achieve the paripurna (ideal) KLA status in 2024 due to its high rate of early marriage. Data from DP3AP2KB showed that from 2022 to June 2023, there were 158 applications for marriage dispensation, mostly caused by premarital pregnancy (DP3AP2KB, 2023).

The high number of cases is influenced by many factors, such as limited information on reproductive health, societal misconceptions about the meaning of marriage, and parents' reluctance to provide early sexual education (Nadar, 2017; Sayyidah et al., 2024). Furthermore, sex education in schools and communities still focuses on biological aspects and sexually transmitted infections, while its psychological and social dimensions receive less attention (Fitriana & Siswantara, 2019). In fact, comprehensive sex education should encompass all three dimensions

so that adolescents have a complete understanding of self-development, healthy relationships, and the risks of early marriage (Marbun & Stevanus, 2019). Socio-cultural factors also play a role, whereas normative and environmental pressures often push adolescents to marry before they reach maturity, especially in cases of premarital pregnancy. Therefore, interventions to reduce early marriage intention should consider the complexity of these factors and employ comprehensive, easily accessible, and culturally relevant educational media.

Meanwhile, Javanese society possesses cultural wealth that can support all three dimensions, namely *Serat Widya Pramana* (SWP), composed by Begawan Yogiswara and Begawan Parasara in 1904. SWP contains numerous teachings relevant for use as sex education material for adolescents to prevent early marriage. SWP covers topics such as the physical, sexual, and psychological development of adolescents, sexually transmitted infections, teachings on choosing a partner, and marriage readiness (Dewantari et al., 2024).

The potential of SWP for sexual education was examined by Dewantari et al. (2023) when developing an educational application named “App Serap.” This application has been proven to improve knowledge about sex and reduce early marriage intentions among adolescents. However, in the long term, this application has not been optimally utilized due to technical limitations, specifically the limited storage space on devices. Therefore, in the present research, the researcher, along with the MBKM UNS team for the period August 2024–January 2025 (Dewantari et al., 2025), developed an educational e-comic titled “*Sera & Sora: Menjelajahi Dunia Remaja*” (Sera & Sora: Exploring the Adolescent World). The primary



source for the e-comic was also the teachings from *Serat Widya Pramana*. This e-comic contains comprehensive sex education material, covering physical development, sexual development, psychological development, sexually transmitted infections, partner selection, and marriage. The e-comic product was the modality in the present study.

The participants in this study were adolescents. This selection was based on Santrock (2019) developmental theory, which views adolescence as a transitional period from childhood to adulthood, characterized by biological, psychological, and social changes. Furthermore, the age range of 15–18 years was selected because it falls into the category of middle adolescence according to Papalia et al. (2008), a stage where individuals search for self-identity, increase social interaction, and experience stronger sexual drives, thus posing a high risk for making impulsive decisions, including those related to marriage. This 15–18 age group also has a relatively high prevalence of early marriage in Surakarta (DP3AP2KB, 2023). Therefore, this age range is relevant for testing the effectiveness of the e-comic intervention in reducing early marriage intentions.

Intention is a central construct in the theory of planned behavior (TPB) developed by Ajzen (1991). Behavioral intention is an individual's drive, encompassing conscious plans, decisions, or self-instructions to allocate effort in performing a target behavior (Conner, 2020). Meanwhile, Law No. 16 of 2019 defines early marriage as a marriage of couples under the age of 19. Based on this definition, early marriage intention in this study is defined as an individual's tendency to marry before the age of 19. According to TPB (Ajzen, 1991), the most immediate antecedent of behavior is the intention to perform that behavior. In other words, the stronger an individual's intention to engage in early marriage, the greater the likelihood that early marriage will occur. This study aimed to determine the effect of using the *Sera & Sora* e-comic on reducing early marriage intention among adolescents in Surakarta.

The use of the "*Sera & Sora: Exploring the Adolescent World*" e-comic is based on research by Nababan and Tete (2024), which found that reading educational comics about health three times per week could effectively improve students' knowledge. Referring to research by Heriadi (2020), which showed that the effective reading speed of 10th-grade students in Bengkulu is 156.09 words per minute, the "*Sera & Sora: Exploring the Adolescent World*" e-comic was administered three times a week, with an average word count per episode of 330 words and an approximate reading duration of 3 minutes per episode. Therefore, this study is expected to provide a scientific basis for the implementation of e-comics as a local wisdom-based sex education media, while also contributing to prevention efforts against early marriage by enhancing adolescents' knowledge of reproductive health and the risks associated with early marriage.

## 1. Methods

This quasi-experimental study used a control group design with dependent pre- and post-test samples. The dependent variable was the intention of early marriage,

and the independent variable was the use of the e-comic "*Sera & Sora: Menjelajahi Dunia Remaja*" (*Sera & Sora: Exploring the Adolescent World*).

The population of this study was adolescents aged 15–18 years who resided in Surakarta. Samples were selected from 167 students of Vocational School (SMK) "X" and 347 students at SMK "Y" in Surakarta using a non-random purposive sampling technique based on the following criteria: (1) residing in Surakarta; (2) having moderate to very high early marriage intention; (3) having never received a similar intervention; (4) being able to read and write, and having no visual impairments; (5) owning a smartphone; and (6) willing to sign the informed consent. According to Arikunto (2019), the recommended number of participants for a large-scale trial ranges from 15 to 50. Based on this reference, the researchers divided the participants into two groups: 20 in the experimental group and 20 in the control group, all of whom had moderate to high intentions of getting married early. The experimental group received the treatment in the form of the "*Sera & Sora: Exploring the Adolescent World*" e-comic, while the control group did not. This e-comic consists of seven episodes: Introduction, Physical Development in Adolescence, Sexual Development in Adolescence, Psychological Development in Adolescence, Sexually Transmitted Infections, Choosing a Partner, and Marriage. These seven episodes had to be read sequentially, from the introduction to the marriage section.

The measurement tool used in this study was the Early Marriage Intention Scale (Dewantari et al., 2025). The scale was found to have good reliability ( $\alpha = 0.803$ ). The scale consists of 26 items, each of which is measured using a five-point Likert scale with five alternative responses i.e. Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree. One example item from this scale is "I would accept a proposal or propose to my boyfriend/girlfriend even if I am not yet 19 years old."

The data were analyzed using a parametric independent sample t-test on the SPSS Statistics 25 software after the data met the prerequisite normality and homogeneity tests.

## 2. Results

Initially, the samples were 40 adolescents divided into experimental and control groups, each consisted of 20 individuals. The experimental group (EG) comprised nine adolescents categorized as having "moderate" early marriage intention, eight as "high", and three as "very high". Meanwhile, the control group comprised nine individuals reportedly having "moderate" early marriage intention, seven categorized as "high", and the remaining four having "very high" level of such intention.

An analysis of data through outlier identification found that three participants in each group had extreme values or observed scores that differed significantly from those of most participants. Outliers should be removed if they cause the data to be non-normally distributed or affect the parameters in decision-making (Sihombing et al., 2023). Consequently, the researchers used data from only 17 adolescents from the EG (eight adolescents at a "moderate" level of early marriage intention, eight at a "high" level, and one at a "very high" level) and 17 from

the CG (nine adolescents at a "moderate" level, seven at a "high" level, and one at a "very high" level).

Subsequent analysis involved assumption tests (normality and homogeneity) on the EG and CG data. The results indicated that the data were normally distributed ( $p > 0.05$ ) and homogeneous ( $p > 0.05$ ). After the assumptions were met, an independent sample t-test was conducted between the experimental group (which received the e-comic intervention) and the control groups (which received no intervention). The results are presented in Table 1 and 2.

**Table 1**  
*Independent Sample T-Test on Experimental and Control Groups (Pretest)*

Variable	Class	<i>t</i>	<i>df</i>	<i>p</i>	MD
Early Marriage Intention	Pretest Experimental	-0.010	62	.992	0.235
	Pretest Control				

Note. MD = Mean Difference; The assumption of homogeneity of variances was met, as assessed by Levene's Test for Equality of Variances ( $p > .05$ ).

The finding showed no significant difference in the average early marriage intention among adolescents in experimental and control groups before the treatment ( $p=0.992$ ;  $p>0.05$ ).

**Table 2**  
*Independent Sample T-Test on Experimental and Control Groups (Posttest)*

Variable	Class	<i>t</i>	<i>df</i>	<i>p</i>	MD
Early Marriage Intention	Posttest Experimental	2.52	62	.017	-6.176
	Posttest Control				

Note. MD = Mean Difference; The assumption of homogeneity of variances was met, as assessed by Levene's Test for Equality of Variances ( $p > .05$ ).

\* $p < .05$

Meanwhile, posttest comparison (Table 2) of experimental and control groups showed a significant difference in early marriage intention among adolescents who received the "Sera & Sora: Exploring the Adolescent World" e-comic intervention and those who did not ( $p=0.017$ ;  $p<0.05$ ).

In other words, H1 was accepted and H0 was rejected, meaning that the "Sera & Sora: Exploring the Adolescent World" e-comic can reduce early marriage intention among adolescents in Surakarta.

Subsequently, a paired sample t-test was conducted to determine the change in early marriage intention scores within the experimental and control groups (Table 3).

The results of the paired sample t-test showed a significant difference between the pretest and posttest mean scores of early marriage intention in the experimental group ( $p=0.00$ ;  $p<0.05$ ). Meanwhile, in the control group, the paired sample t-test showed no significant difference between the pretest and posttest mean scores of early marriage intention ( $p=0.723$ ;  $p>0.05$ ). This analysis supports the evidence of the effectiveness of "Sera

**Table 3**

*Paired Sample T-Test on Experimental and Control Groups (Pretest-Posttest)*

Group	Paired Differences			<i>t</i>	<i>df</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>SE</i>			
Experimental	5.765	3.509	0.851	6.773	16	< .001
Control	-0.647	7.382	1.790	-0.361	16	.723

Note. *M* = Mean Difference; *SD* = Standard Deviation; *SE* = Standard Error

\*\* $p < .001$

*& Sora: Exploring the Adolescent World*" e-comic in reducing early marriage intentions among adolescents in Surakarta.

### 3. Discussion

The results of the data analysis using t-tests indicate a significant difference in early marriage intention among adolescents after receiving the "Sera & Sora: Exploring the Adolescent World" e-comic intervention than those who did not receive it. These findings suggest that the sex education provided through the "Sera & Sora: Exploring the Adolescent World" e-comic could help reduce adolescents' intention to engage in early marriage.

The success of this educational e-comic is attributed to its content, which is based on the teachings of the *Serat Widya Pramana*, covering biological, psychological, and social dimensions of sex education. This approach aligns with the study by Marbun and Stevanus (2019), which emphasized that comprehensive sex education must encompass all three dimensions. It is also consistent with the findings of Chibuye and Kumatongo (2022), who highlighted the crucial role of comprehensive sex education in preventing early marriage through the provision of extensive information on sexuality, reproductive rights, and healthy relationships. This understanding enables adolescents to make informed decisions regarding relationships and avoid social pressures leading to early marriage. Comprehensive sex education also helps them recognize the negative impacts of early marriage, e.g., unintended pregnancies and health risks, empowering them to postpone marriage until they reach maturity, both physically and emotionally.

These results support the study by Yulianty et al. (2024), which utilized digital comic media (e-comic) to provide education on early marriage prevention by enhancing adolescents' knowledge, as well as the research by Sarliana et al. (2024), which revealed that comic is an effective medium in improving adolescents' understanding of marriage age maturity (*pendewasaan usia perkawinan*, PUP). The knowledge enhancement through comic-based education was three times greater, and the positive attitude change was four times greater compared to when using other educational media. The improvement in adolescents' understanding through this education can influence the formation of attitudes toward certain behaviors, where such attitudes strengthen an individual's intention to avoid those behaviors (Jayanti, 2021). Comprehensive sex education is essential for educating children about sexual and reproductive health issues by delivering information in accurate, timely, and non-judgmental manners

(Ririnisahawaitun et al., 2023). Ultimately, this education empowers adolescents to make informed decisions regarding their sexual and reproductive health, including understanding the risks of early marriage, thereby preventing hasty decisions.

This study had several limitations. The e-comic used presented relatively short episodes or materials, and its repetitive use three times a week led to boredom among adolescent participants, limiting their understanding of the content. Additionally, researchers were unable to follow up and determine whether the changes observed in the participants were consistent or coincidental, as the school objected to further data collection during examination periods. The researchers also noted that a lack of participant engagement, such as some participants not taking the program seriously, further influenced the outcomes. Other limitations include the categorization of data relying solely on empirical statistical approaches, meaning the conclusions are only applicable to the observed data. The study was also constrained by the limited theoretical frameworks available regarding aspects of early marriage, resulting in scale indicators being developed solely based on the definition from Law No. 16 of 2019 and the factors underlying early marriage occurrences.

#### 4. Conclusion

Based on the research results, reading the "Sera & Sora: Exploring the Adolescent World" e-comic has been found to significantly reduce early marriage intentions among adolescents in Surakarta.

#### 4.1 Recommendation

Based on the research findings, the following suggestions can be applied in the use of e-comics and for future research. First, subsequent research could expand on the material variety and storyline with examples that reflect current realities. Second, school counselors and/or educational institutions can utilize the intervention in this study as an alternative to provide sex education in an effort of early marriage. Finally, collaboration between schools and community organizations can enhance the implementation of this e-comic-based intervention, thereby amplifying the program's positive impact.

### 5. Declaration

#### 5.1 Acknowledgments

The authors would like to express their gratitude to the students who participated in this study and to the headmaster of the school for providing the opportunity to conduct the entire research process.

#### 5.2 Funding

This study was fully supported by the authors' self-funding.

#### 5.3 Authors' Contributions

The first author was responsible for designing the assessment, conducting the study, and drafting the manuscript. The second author contributed to strengthening the methodology, provided guidance and feedback during the

assessment and intervention processes, and supported the manuscript preparation.

#### 5.4 Conflict of Interest

The authors declare that there are no conflicts of interest related to the writing of this article.

#### 5.5 Declaration of Generative AI in Scientific Writing

The author declares that no artificial intelligence tools (such as ChatGPT, Gemini, or others) were used in the preparation of this paper.

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