



QR Code Increases Knowledge The Dangers of Free Sex

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| Track Record Article | Abstract |
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| <p>Revised: 19 February 2025 Accepted: 10 June 2025 Published: 30 June 2025</p> <p>How to cite : Yuniarti, & Destariyani, E. (2025). QR Code Increases Knowledge The Dangers of Free Sex. <i>Contagion : Scientific Periodical of Public Health and Coastal Health</i>, 7(1), 153–161</p> | <p><i>In Bengkulu Province, 1.0% of teenagers have engaged in premarital sexual activity with their partners, with a prevalence of 1.6% among male teenagers and 0.6% among female teenagers. This study aims to examine the effectiveness of QR Code digital media in enhancing teenagers' awareness of the risks associated with casual sex at State Senior High School 8 Bengkulu. The research adopts a quasi-experimental design using a pre-test and post-test with a control group methodology. The sampling technique employed proportionate stratified random sampling, selecting a total of 72 students 36 in the intervention group and 36 in the control group. The analysis was conducted using the Wilcoxon test and the Mann-Whitney test. The findings indicate that QR Code digital media ($p = 0.000$) and Instagram ($p = 0.000$) were both effective in increasing adolescents' knowledge regarding the risks of casual sex. The mean difference in knowledge levels was 5.69 for QR Code digital media and 5.41 for Instagram. Furthermore, QR Code digital media demonstrated a greater impact (0.47) in improving teenagers' awareness of these risks at State Senior High School 08 and State Senior High School 10, Bengkulu. These findings highlight the potential of QR Code digital media as an effective educational tool. It is recommended that academics, educational institutions, and researchers further integrate and develop digital media-based learning strategies to enhance teenagers' knowledge, particularly regarding sexual health education.</i></p> <p>Keywords: <i>Teenagers; Dangers of free sex; QR Code; Instagram; Knowledge</i></p> |

INTRODUCTION

Unrestricted sexual activity, commonly referred to as "free sex," involves sexual intercourse between individuals without adherence to societal regulations or a clear purpose, driven purely by sexual desire and occurring outside the framework of marriage whether between opposite-sex or same-sex partners among adolescents. Data from the Indonesian Child Protection Commission KPAI (2022) highlights the risks associated with free sex, including unintended pregnancies (20%), early marriages, abortions (21%), and sexually transmitted infections (30%) among adolescents.

The limited knowledge adolescents have about free sex is largely due to the lack of accurate information available in society. Sex-related topics are often considered taboo and avoided in open discussions with children. Additionally, societal perceptions tend to define sex strictly within the context of marital relationships, leading many parents to hesitate in providing early sexual education to their children (Joodaki et al., 2020).

Efforts to enhance adolescents' awareness of the risks associated with free sex necessitate the use of effective educational media tailored to their needs. Advances in

technology have transformed information dissemination, particularly among young people, who are highly engaged with digital media platforms. Various applications facilitate easy access to information, reshaping the concept and significance of learning. One such innovation is QR Code (Quick Response Code) media a two-dimensional barcode capable of storing and delivering diverse types of information directly (Cong & He, 2020).

The use of QR codes enhances knowledge acquisition, facilitates access to information and skills, and allows individuals to retrieve content anytime and anywhere using a mobile camera. Research findings Al-Sababha (2024) ;Hidayati (2022) indicate that QR Code-based education effectively improves knowledge retention and information comprehension.

According to data from the Bengkulu Provincial Office of Education and Culture (2022/2023), four high schools are located within the study area State Senior High School 10 Bengkulu and State Senior High School 03 Bengkulu in Selebar District, and State Senior High School 8 Bengkulu and State Senior High School 09 Bengkulu in Muara Bangka Hulu District. A survey conducted on March 15, 2024, at State Senior High School 8 Bengkulu revealed that 50% of students demonstrated low knowledge levels, 30% had moderate knowledge, and 20% were well-informed. Information provided by the school's Guidance Counseling (BK) teacher indicated that a significant number of students engaged in behaviors deemed deviant, including dating activities influenced by various factors such as daily interaction in the school environment, peer influence, limited knowledge, lack of education, and restricted access to information on adolescent behavioral risks and premarital sex consequences. Furthermore, the guidance and counseling teacher reported that during the 2023/2024 academic year, 13 students dropped out, with several cases associated with issues of premarital sexual behavior.

Based on these observations, the researcher selected State Senior High School 8 Bengkulu as the research site. The study aims to analyze the characteristics of respondents (age and gender), measure the average increase in adolescent knowledge about the dangers of free sex, and assess the impact of QR Code digital media on adolescents' awareness of these risks.

METHODS

This study is quantitative research employing a quasi-experimental design with a pre-test and post-test control group methodology. The research involved two groups of participants: an intervention group that received QR Code media-based education and a control group that was provided with poster media. The QR Code in this study contained information on key aspects of free sex, including its definition, contributing factors, consequences, and prevention

strategies. The QR Code design was adapted from previous research (Agus et al., 2023) and had been validated for usability.

The study was conducted at State Senior High School 8 Bengkulu, which served as the intervention site, and State Senior High School 10 Bengkulu, designated as the control site. Data collection took place between June 3 and June 28, 2024. The study population comprised 560 students from class X at both schools, as class X represents the initial stage of high school and a critical transitional period into adolescence. The class X students at State Senior High School 8 Bengkulu consisted of 130 males and 185 females, totaling 315 students, while those at State Senior High School 10 Bengkulu included 137 males and 131 females, totaling 245 students.

A total sample of 72 students was selected using the proportionate stratified random sampling technique, which considered age and gender and ensured proportional representation from each class. The intervention group at State Senior High School 8 Bengkulu consisted of nine classes, with four students randomly selected from each class, yielding a total of 36 participants. In the control group at State Senior High School 10 Bengkulu, eight classes were included, with 4–6 students randomly chosen per class to reach a total of 36 participants.

The reproductive health knowledge questionnaire underwent validity testing among 10 respondents using the Pearson product-moment correlation technique. A question was deemed valid if its correlation coefficient ((r_{xy})) exceeded the table value ($(r) = 0.63; (n) = 10$). The results indicated that all 12 question items (1–12) had correlation values exceeding 0.632, confirming their validity. Reliability testing of the validated questionnaire was conducted using Cronbach's alpha, yielding a reliability coefficient of 0.946, indicating high reliability (Nuarianti, 2020).

Univariate analysis was performed to assess the frequency distribution of respondents' characteristics, including age and gender, and to evaluate the changes in respondents' knowledge before and after the intervention using computerized statistical techniques. This study employed two statistical tests: the dependent t-test, which examined differences in knowledge levels before and after exposure to digital QR Code media. The study was ethically reviewed and approved by the Ethics Committee of the Bengkulu Ministry of Health Polytechnic, under reference number KEPK.BKL/450/06/2024.

RESULTS

Table 1. Characteristics of Respondents

| Variable | Treatment Group | | Control Group | |
|----------------|-------------------------------|------|-------------------------------|------|
| | (State Senior High School 08) | | (State Senior High School 10) | |
| | (f) | (%) | (f) | (%) |
| Respondent Age | | | | |
| 15 years old | 6 | 16,7 | 3 | 8,3 |
| 16 years old | 30 | 83,3 | 33 | 91,7 |
| Gender | | | | |
| Male | 18 | 50 | 19 | 52,8 |
| Female | 18 | 50 | 17 | 47,2 |

Based on table 1, it was found that of the 72 respondents based on age, most were 16 years old. In gender, most of the respondents were male.

Table 2. Knowledge Improvement about Digital QR Code Media and Instagram Media

| Knowledge | Treatment Group | | | | Control Group | | | |
|------------|------------------------------|------|-----------|------|-------------------------------|------|-----------|------|
| | (State Senior High School 8) | | | | (State Senior High School 10) | | | |
| | Pre-test | | Post-test | | Pre-test | | Post-test | |
| | (f) | (%) | (f) | (%) | (f) | (%) | (f) | (%) |
| Lacking | 28 | 77,8 | 0 | 0 | 18 | 50 | 0 | 0,0 |
| Sufficient | 5 | 13,9 | 1 | 2,8 | 11 | 30,6 | 4 | 11,1 |
| Good | 3 | 8,3 | 35 | 97,2 | 6 | 16,7 | 32 | 88,9 |

Based on Table 2, prior to the intervention, the majority of adolescents exhibited limited knowledge about the dangers of free sex, with 77.8% in the intervention group and 50% in the control group demonstrating low awareness. Following the intervention, a significant improvement in knowledge was observed, with 97.2% of participants in the intervention group and 88.9% in the control group displaying a good level of understanding

This analysis employs two statistical tests: dependent and independent statistical methods. The dependent statistical test is used to evaluate the effect of the intervention on knowledge improvement within the intervention and control groups before and after the intervention. In contrast, the independent statistical test is applied to determine the impact of QR Code digital media on enhancing adolescents' awareness of free sex.

Prior to conducting the dependent statistical test, a normality assessment was performed using the Kolmogorov-Smirnov test. The results indicate that the pre-test score of the intervention group was not normally distributed (Sign = 0.001, $p < 0.05$), and the post-test score of the intervention group was also not normally distributed (Sign = 0.000, $p < 0.05$). Similarly, the pre-test score of the control group was not normally distributed (Sign = 0.000, $p < 0.05$), and the post-test score of the control group exhibited non-normal distribution as well (Sign = 0.000, $p < 0.005$). Given the non-normal distribution of the test scores in both the intervention and control groups, the analysis proceeded with the Wilcoxon test, with the following results:

Table 3. The Effect of Digital QR Code Media and Instagram Media on Increasing Knowledge about the Dangers of Free Sex at State Senior High School 08 and State Senior High School 10 Bengkulu

| Variable | Mean | Mean Difference | SD | P-Value |
|----------------------------|------|-----------------|------|--------------------|
| Knowledge QR Code | | | | |
| Before | 4,25 | 5,69 | 0,96 | 0,000 ^a |
| After | 9,94 | | 0,23 | |
| Knowledge Instagram | | | | |
| Before | 4,06 | 5,41 | 1,41 | 0,000 ^a |
| After | 9,47 | | 0,60 | |

Based on Table 3, the Wilcoxon test results indicate that QR Code media had a significant impact on increasing adolescents' knowledge about the dangers of free sex at State Senior High School 8 Bengkulu, with a mean difference of 5.69 and a P-value of 0.000 ($p < 0.05$). Similarly, Instagram media demonstrated a significant influence on improving adolescents' knowledge at State Senior High School 10 Bengkulu, with a mean difference of 5.41 and a P-value of 0.000 ($p < 0.05$).

Table 4. Differences in the Effect of Digital Media QR Code and Instagram on increasing adolescents' knowledge about the dangers of free sex in State Senior High School 08 and 10 Bengkulu

| Variable | Mean | Mean difference | Mean Rank | P-Value |
|------------------|------|-----------------|-----------|--------------------|
| Knowledge | | | | |
| <i>Qr Code</i> | 9,94 | 0,47 | 44,06 | 0.000 ^b |
| <i>Instagram</i> | 9,47 | | 28,94 | |

Based on table 4. the Mann-Whitney test results obtained a mean difference (0.47) and P-Value = 0.000 < 0.05 , which means that there is a difference in the mean knowledge about the dangers of free sex in the QR Code and Instagram groups so that it can be concluded that the QR Code group is more effective (0.47) to increase adolescents' knowledge about the dangers of free sex compared to Instagram.

DISCUSSION

The frequency distribution analysis of respondent characteristics revealed that the study included a total of 72 participants, with the majority aged 16 years. This study focused on adolescents aged 15–16, as this age group is considered at risk for engaging in sexual behavior due to heightened curiosity and a tendency to explore new experiences both of which are defining characteristics of adolescence. Without a balanced approach that integrates reproductive health education and sexual awareness, such curiosity may lead to adverse consequences that can impact their future (Shalahuddin et al., 2024). Fundamentally, 16 years marks a transitional phase characterized by physical, emotional, and sexual development, which further amplifies adolescent curiosity about various aspects of life (Hashmi et al., 2022).

Based on the study results, there was a notable increase in average knowledge scores following the intervention with QR Code digital media. The mean knowledge score before the intervention was 4.25, which rose to 9.94 after the intervention, with a mean difference of 5.69. These findings align with research conducted in Hong Kong, which evaluated the effects of nutrition education on the dietary choices of secondary school students. The study demonstrated that nutrition education interventions effectively enhanced students' knowledge of nutrition and promoted positive changes in their eating habits (Tse et al., 2009). Similarly, research by Sukmawati et al., (2023), showed an improvement in respondents' knowledge from pre-test to post-test. Prior to the intervention, the mean knowledge score was 23.28, which increased to 28.16 post-intervention. The study utilized a knowledge questionnaire consisting of 10 items, where respondents initially exhibited lower scores on question 9, which addressed the stages of change in adolescence. However, post-intervention, scores on this question improved, and overall, there was a significant increase in knowledge among respondents after receiving education through QR Code media.

Based on the study results, there was a significant increase in average knowledge scores before (4.06) and after the educational intervention (9.47), with a mean difference of 5.41. These findings align with research conducted by Jannah in 2022, which demonstrated that nutrition education delivered through Instagram, using the Four Pillars of Balanced Nutrition framework, effectively enhanced the nutritional knowledge of adolescent boys in Pontianak City. The median nutritional knowledge score before the intervention (pre-test) was 9, which increased to 15 after the intervention (post-test), reflecting a difference of 6 points. Statistical analysis using the Wilcoxon test yielded a P-value of 0.000, indicating a significant difference in the nutritional knowledge of adolescents before and after receiving social media-based nutrition education (Jannah et al., 2022).

This study utilized a knowledge questionnaire comprising 10 items. Prior to the intervention, respondents demonstrated lower scores on question 9, which addressed the stages of change during adolescence, and question 6, which examined the impact of free sexual behavior on adolescents. However, post-intervention, scores on these items improved, and overall, there was a notable increase in knowledge following education through Instagram media.

Based on the study results, the Wilcoxon test on knowledge revealed a mean difference of 5.69 with a P-value = 0.000 ($p < 0.05$), indicating that digital QR Code media significantly improved adolescents' knowledge about the dangers of free sex at State Senior High School 8 Bengkulu. This finding aligns with research conducted by Supriyono (2020), which

demonstrated a significant difference in knowledge before and after health counseling using QR Code media, with a P-value of 0.0000 ($\alpha < 0.05$). Moreover, knowledge scores following QR Code-based counseling were notably higher compared to those obtained through traditional leaflet-based counseling.

These findings are consistent with previous studies that examined the effectiveness of various digital media formats, including QR Code applications, in enhancing adolescents' understanding of sexual health risks. Research has shown a significant increase in knowledge among individuals receiving digital interventions compared to control groups, supporting the notion that digital media serves as an effective educational tool for sensitive health topics (Borji-Navan et al., 2024). Additionally, other studies have demonstrated the impact of QR Code technology on adolescent knowledge and attitudes toward health education. The results indicate that QR Code-based health campaigns not only significantly improve knowledge but also foster positive behavioral changes among adolescents (Metzger et al., 2024). These findings further substantiate the role of digital media as a valuable resource in adolescent health education.

Based on the study results, the Wilcoxon test of knowledge revealed a mean difference of 5.41 with a P-value of 0.000 ($p < 0.05$), indicating a significant influence of Instagram on increasing adolescents' awareness of the dangers of free sex at State Senior High School 10 Bengkulu. The statistical test results further confirmed a P-value of 0.000 ($p < 0.005$), demonstrating a measurable difference in knowledge levels before and after the use of Instagram as an educational tool. Consequently, there was a significant increase in knowledge scores post-intervention, supporting the conclusion that Instagram is an effective medium for enhancing adolescent awareness on this topic (Marlinawati et al., 2023).

Based on the study results, the Mann-Whitney test revealed that the mean knowledge score for the intervention group using QR Code media was 9.94, while the control group using Instagram had a mean score of 9.47, resulting in a mean difference of 0.47. The P-value of 0.000 ($p < 0.05$) indicates a significant difference in the average knowledge scores between the QR Code intervention group and the Instagram control group.

The use of QR Code digital media has been shown to effectively enhance knowledge, as it actively engages adolescents in the learning process, making education more interactive and enjoyable (Merino et al., 2021). Additionally, QR Code technology, when integrated with smartphones, serves as an effective instructional tool in classroom learning settings (Romadhoni et al., 2025).

These findings align with the Mann-Whitney test results, which demonstrated that the QR Code digital media group experienced a greater increase in knowledge (0.47) compared to the Instagram media group. Thus, H_0 fails to be rejected, confirming a significant difference in the impact of digital media on adolescents' understanding of the dangers of free sex at State Senior High School 8 Bengkulu.

QR Code digital media is particularly effective in increasing adolescent knowledge of the risks associated with free sex due to its ability to provide quick and easy access to relevant, interactive content such as videos and infographics. This technology enables the delivery of personalized and updated information, ensuring accuracy and relevance. Moreover, QR Codes offer a private and discreet means of accessing sensitive health-related content, reducing embarrassment and fostering greater acceptance and comprehension among adolescents (Chandra-Mouli et al., 2020).

CONCLUSION

Based on the study results, there are notable differences in the effect of digital media QR Code on improving adolescent knowledge about the dangers of free sex at State Senior High School schools in Bengkulu. Among the 72 respondents, the majority were 16 years old, and most were male. Prior to the intervention, respondents exhibited low levels of knowledge regarding free sex; however, post-intervention, their knowledge increased significantly. The QR Code media proved to be more effective than Instagram, with a mean difference of 0.47 in enhancing awareness among students at State Senior High School 08 and State Senior High School 10 Bengkulu. Health practitioners can leverage these findings to improve adolescent education on the risks associated with free sex and to mitigate its negative consequences. Further in-depth research incorporating additional variables is recommended to enhance adolescent knowledge on this topicBengkulu.

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