

## The Effectiveness of the HEY Website for Increasing Adolescents' Reproductive Health Knowledge

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### ABSTRACT

**Background:** Conventional health promotion media such as leaflets are considered not to meet the needs of patients for health information. Ineffective health promotion media can contribute to the occurrence of a health problem. The HEY Website is a health promotion media that is aligned with the current situation which is the digital era. **Objectives:** This study was conducted to analyze the increase in knowledge of high school students who have received edutainment interventions from the HEY Website. **Methods:** This research was quantitative research with a quasi-experimental research design in the form of peer educator training using the HEY website. The respondents of this study were 50 high school students at SMAN 1 Turen in Malang Regency with the inclusion criteria being grade X and XI and active in student organizations as they may bring better influence among peers. **Results:** There was an increase in knowledge, as shown by the average pretest score of 64.5. After the training, the post-test score showed an average number of 86.2. Statistical analysis also showed significant results in knowledge differences before and after the intervention ( $P=0,000$ ). **Conclusion:** The HEY website as a digital-based adolescent health promotion media proved significant in increasing student knowledge about adolescent health.

**Keywords:** Adolescent, Edutainment, Health promotion, Well-being.

### INTRODUCTION

As the world continues to experience technological advancement, so does health promotion as one of the efforts to improve society's well-being. Conventional health promotion media that exist today such as leaflets are less effective than video or audiovisual media (Halim, 2021). Other conventional media such as posters are also considered less effective as health promotion media although they are still widely used to reach older audiences in large numbers for a long period (Barik et al., 2019; Hasanica et al., 2020). This phenomenon needs to be studied so that effective and attractive health promotion media are obtained, especially for adolescents.

Adolescents are an age group that is vulnerable to risky behavior usually defined as the TRIAD Kesehatan Reproduksi Remaja (KRR)/Adolescent Reproductive

Health), which is three adolescent reproductive health risks related to sexuality (unwanted pregnancy, abortion and infection with sexually transmitted diseases), drug abuse, and HIV AIDS (DP3KB Kabupaten Brebes, 2018). The rate of early marriage in Indonesia is ranked eighth in the world with 1,459,000 cases which means 11.2% of children in Indonesia are married under the age of 18 years and 0.5% marry when they are 15 years old (UNICEF, 2023). The results of the National Socioeconomic Survey (SUSENAS), as many as 10.85% of women in East Java are married between the ages of 7-15 years, making it the third place on the list of 10 provinces with the highest rate of early marriage in Indonesia (Kusnandar, 2020).

Malang Regency is the highest contributor to the number of early marriages in East Java Province with a high rate of marriage dispensation (Departemen Bimbingan dan Konseling Fakultas Ilmu

Pendidikan Universitas Negeri Malang, 2023). According to data from the Religious Court (PA), in 2023 in Malang Regency, there will be an early marriage rate with a high number of 1,009 cases of marriage dispensation due to unwanted pregnancies (Dyampri, 2024). This event can occur as a result of irresponsible dating relationships where which has the potential for adolescents exposed to HIV / AIDS (Petroni et al., 2019). Drug abuse cases are also a problem for adolescents in Malang Regency where in 2022 between January and August 196 cases were found with 2 children as dealers with the perpetrators being teenagers aged 15-17 years (Sampurno, 2022).

Ineffective health promotion media can contribute to the occurrence of a health problem. Following the development of the current era is very close to technology, a digital-based health media is designed as an effort to improve adolescent health both physically, mentally, and socially. The Health Educator for Youth (HEY) website is a health promotion media designed based on previous research that shows the needs and interests of adolescents in the form of health information sources in the form of websites with material that continues to be updated every year under the development of adolescent health problems (Nurmala, 2020). Health information is delivered by the edutainment method, which is a combination of education and entertainment (entertainment) which has been proven in previous research as an educational method that is more effective in adolescents and stimulates creativity than the lecture method (Nusair et al., 2015). The HEY website is also designed for teenagers to become *peer educators*, which means teenagers become peer tutors and role models for their friends. This is an effective way to form healthy behaviors in adolescents considering the characteristics of adolescents who are very affected by the surrounding environment (Nurmala et al., 2019; Nurmala et al., 2021; Nurmala et al., 2021). The development of this website is also an effort to help the BKKBN program in reducing the number of early marriages in Malang Regency, so the research was conducted at the Sekolah Siaga Kependudukan (SSK)/the Population-

Focused School which is one of the BKKBN programs for adolescents.

In previous studies, edutainment methods with different applications or media have proven effective in increasing adolescent knowledge (Bramastya et al., 2022; Muthmainnah, Nurmala, et al., 2021a; Nadia et al., 2022; Siswantara et al., 2019). The HEY Website was developed based on previous research which stated that teenagers prefer websites as a suitable media for health information sources because it is more compact, do not use up a lot of data plan or phone storage, and are easy to access (I. Nurmala, 2020a). Therefore, this study was conducted to analyze the increase in knowledge, attitudes, and behavior of high school students who have received edutainment interventions from the HEY Website as a source of adolescent health information.

## METHODS

### Study Design

This research was quantitative research with a quasi-experimental research design in the form of *peer educator training* using the HEY website media. This study was conducted for one month with three meetings. The first meeting (offline) was the website introduction stage and account registration on the HEY website. After the first meeting, students were asked to access the 8 materials available on the website individually within two weeks. The scheme was for each material before students receive health education, students need to complete a pre-test to measure their knowledge before the intervention, then watch the educational video that has been provided. After accessing the educational material (intervention), students must complete the post-test to measure their knowledge after the intervention. The second meeting was held *online* to discuss the obstacles encountered by students when completing educational materials. The third meeting was conducted *offline* to deliver *Life Skills* and adolescent communication material and also evaluation.

### Sampling

The HEY training was attended by 50 students from the Population-Focused School (SSK), namely SMAN 1 Turen in Malang Regency who were selected with purposive sampling techniques with inclusion criteria, namely grade X or XI

students to become peer educators for next year class and were active in school organizations as they may act as a role model to their peers and have more impact.

**Data Analysis**

Student knowledge data collected through pre and post-tests will be analyzed by different test analyses to see if there is a difference between before and after intervention.

**Ethics**

This research has been accepted by the Ethics Committee of the Faculty of Nursing, Universitas Airlangga with the number KEPK 2976.

**RESULTS AND DISCUSSION**

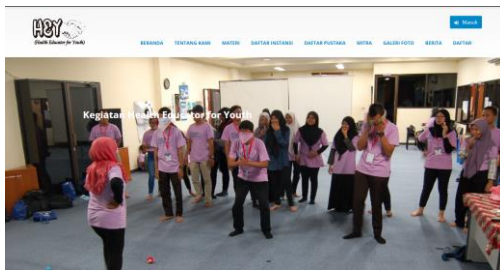


Figure 1. HEY Website.

The HEY website (<http://hey.fkm.unair.ac.id>) is one type of edutainment-based health promotion media that supports adolescents to be healthy physically, mentally, and socially. Through this website, researchers and stakeholders can find out the problems that occur in adolescents. This website consists of 8 materials and 1 E-book:

1. Characteristics of adolescents
2. The ideal teenage body
3. Physical activity of healthy adolescents
4. Body shaming, nutrition, and teen diet
5. Adolescent reproductive health and love management
6. Dare to say no!
7. Confusion, stress, and coping mechanisms
8. Adolescent time management
9. Realizing healthy adolescents physically, mentally, and socially (e-book)

Table 1. Characteristics of Respondents by Sex.

Characteristic	n	%
Male	16	32
Female	34	68

Male	16	32
Female	34	68

Based on Table 1, the characteristics of the study respondents were more female students, namely 34 people (68%) and 16 male students (32%).

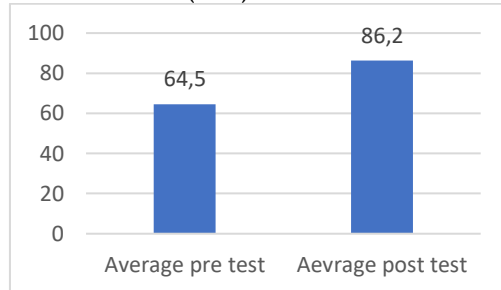
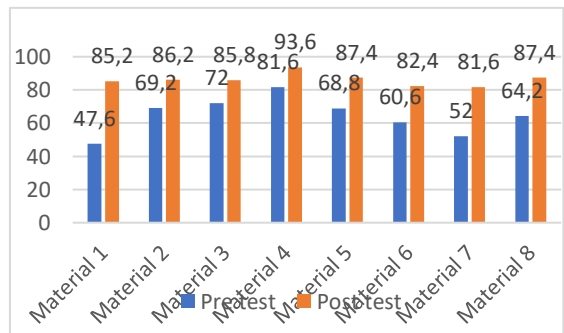


Figure 2. Participant's Knowledge score.

Based on the pretest and posttest result data shown in Figure 2, the average pretest before education is 64.5. After the training, the posttest score showed an average number of 86.2. This shows an increase in average knowledge after training. Respondents are assessed as passing if they reach the benchmark post-test score of 80.

Figure 3. Increased Knowledge of Participants per Material.



In Figure 3 it can be seen that the average increase in knowledge per material is assessed from the pretest and posttest that have been done. Seen in material 4, namely body shaming, nutrition and adolescent diet, the average pre-test score is above 80 which shows that adolescents' knowledge of the material is good enough. Then, during the post-test, the average score rose to 93.6 and became the highest average posttest score among other materials. Then, material 1, namely material about adolescent characteristics, is the material with the highest difference in pre-test and posttest scores. Material 7, namely material about confusion, stress, and coping mechanisms, has a high

average difference between pretest and posttest, but the posttest value of material 7 is the lowest among other posttest material values. This shows that teenagers' knowledge of these two materials is still lacking and needs to be improved.

The first material: The Characteristics of Adolescents, explains the characteristics of adolescents, physically (biologically), mentally, and socially so that adolescents understand more about their characteristics where this is related to adolescent self-awareness which is useful in determining problems (Kreibich et al., 2020). Adolescents with high self-awareness will be more likely to identify problems around them and use these skills on a personal level or when they help others (Akmalovna, 2022). High self-awareness in adolescents will have an impact on adolescents' willingness to achieve their goals (Le et al., 2023).

The second, third, and fourth materials discussed a healthy adolescent body, which is related to the adolescent lifestyle and its implications. Adolescence is a golden period where many diseases can be prevented early. Previous research has shown that there was a decrease in physical activity in teenagers aged 16-17 years compared to when they were 11-12 years old (Marques et al., 2020). This is associated with a higher risk of depressive symptoms at age 18 (Kandola et al., 2020). Adolescents stated many barrier factors to their involvement in a healthy lifestyle, one of the most important factors was individual's attitude, knowledge and understanding (Martins et al., 2021). Therefore, this material provides education to adolescents about a healthy body and how to maintain it. This is also related to adolescent characteristics: a period of self-discovery. So, the perspective of themselves is very important, including the perspective of their bodies. The rise of social media use in adolescents creates a misleading understanding of a healthy body for adolescents because they are influenced by someone, they follow on social media (Jiotsa et al., 2021). Adolescents are prone to decreased self-esteem and confidence due to exposure to social media (Rodgers & Rousseau, 2022) and there is a tendency, especially among adolescent girls, to

change their appearance and get validation on social media (Jiotsa et al., 2021). This is an indication that the health of adolescents is threatened both physically, mentally, and socially.

The fifth material discussed adolescent reproductive health where this theme not only discussed biological and sexual characteristics but also love management. Indonesia is still a country with a fairly high rate of early marriage, based on data from the Indonesian Central Statistics Agency as many as 21.5% of Indonesian youth recorded their first marriage age at the age of  $\leq 18$  years (BPS, 2022). Early marriage may occur due to low knowledge of reproductive health (I. Nurmala et al., 2020) which can have an impact on the dating behavior and sexual behavior of adolescents (Najib & Nugroho, 2020) which can further lead to unwanted pregnancies (Kosasih et al., 2021; Yusran et al., 2024) and become a contributing factor in early marriage in Indonesia.

Furthermore, the sixth, seventh, and eighth materials focus more on adolescent mental health issues. Peer pressure and peer influence among adolescents are essential, many adolescent behaviors, both bad and good, are influenced by their peers (I. Nurmala, 2020b; I. Nurmala et al., 2019; I. Nurmala, Rachmayanti, et al., 2021). By daring to say no, adolescents are expected to have good self-efficacy thus preventing them from risky behaviors (Wong & Yang, 2021) such as risky dating behavior (Shaluhiah et al., 2020), drug abuse (I. Nurmala et al., 2022), etc. A good coping mechanism for a problem also supports adolescents in forming self-efficacy (Freire et al., 2020). Good time management is a form of good self-regulatory behavior that supports adolescents in achieving their goals (Wolters & Brady, 2021).

Based on Table 2, based on the results of the Wilcoxon test, the significance value is 0.000 ( $p < 0.005$ ) which means that there is a significant difference between the knowledge value before the intervention and after the intervention. This shows that the use of the HEY website has a positive effect on increasing adolescent knowledge, where the average increase is 25.50.

**Table 2.** Pre-test-Post test Knowledge Analysis.

	Pretest	Post-test
Z		-6,158
Asymp. Sig (2-tailed)		0,000

Based on the results of the study above, it is known that there is an increase in knowledge among adolescents (students) from before the intervention, namely health education using the edutainment method and after the intervention. The results of the difference test show that there is a significant difference.

Previous research that applies peer education methods as an effort to prevent HIV in high-risk adolescents also shows that this method is an effective method that has a long-term impact on changing adolescent behavior (He et al., 2020). Other studies using the edutainment method show results where edutainment is more accessible to all groups because it is packaged using technology and there are opportunities for respondents to discuss educational materials delivered to parents, companions, and experts (Kyegombe et al., 2022). In this day and age, which is the era of technology, it means that almost all circles of society have been exposed to technology or the internet. Data shows that the internet penetration rate in Indonesia in 2024 has reached 79%, where Java is the area with the highest internet penetration rate of 83.64%. The internet penetration rate among adolescents in Indonesia has also reached 99.16%, so the application of digital-based edutainment should be more widely applied in Indonesia.

Other studies examining community edutainment have also shown positive results (Le Port et al., 2022). Community edutainment from the perspective of this study, can be interpreted as edutainment carried out together with peers. This is similar to what is done when conducting research and determining inclusion criteria. Research respondents who can take part in this research are organizational students so that it has its own attraction for other students. The influence of peers increases students' interest in attending health education activities (I. Nurmala, Muthmainnah, et al., 2021; I. Nurmala, Rachmayanti, et al., 2021).

Other studies that show increased knowledge after intervention using edutainment methods are also shown by several studies conducted by (Bramastya et al., 2022; Muthmainnah, Nurmala, et al., 2021b; Muthmainnah, Salim, et al., 2021; Nadia et al., 2022; Ir. Nurmala et al., 2020; Siswantara et al., 2019). The HEY website has edutainment characteristics that allow subjects to be creative, interactive, flexible, and easy to reach and is an innovation that provides convenience for users so that it is easy to accept (Nuraini et al., 2020; Siswantara et al., 2021).

## CONCLUSION

The HEY website as a digital-based adolescent health promotion media can significantly increase students' knowledge of physical, mental, and social health. Increased knowledge can further encourage changes in adolescent behavior to prevent risky behavior.

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