



The Effectiveness of Using Comics in Efforts to Increase Adolescent Health Knowledge: A Literature Review

Delita Septialti^{*1)}; Zahroh Shaluhayah¹; Bagoes Widjanarko¹

¹⁾ Faculty of public Health, Universitas Diponegoro

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ABSTRACT

The use of media following the conditions of the audience or recipient of the message is one of the success factors in giving messages. Comics are one of the most effective media for adolescents. The display of comics with pictures and colours becomes one of their attractions. The simple language and funny stories make adolescents not feel bored when reading the comic. This study aims to determine the effectiveness of comics in increasing health knowledge in adolescents. The research method used is a literature review. Twenty articles have been filtered based on inclusion and exclusion criteria published between 2018-2022. The results show that comics can increase adolescent health knowledge, even for materials that are considered sensitive. Comics are an innovation in health promotion because they are not dull. The language of comics is simple enough for teenagers to analyze. It increases their motivation to learn because they do not pressure them. Comics do not only help teenagers but also help givers of material in facilitating delivery. In addition, acceptance from teenagers also encourages the use of comics as a medium for learning health. Comics are innovations in health media that effectively increase adolescent health knowledge, even for sensitive themes. It is recommended that health agencies use comics as an educational medium to facilitate the delivery of material.

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Kata kunci:

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^{*}) corresponding author

Delita Septialti

Health Promotion, Faculty of public health, Universitas Diponegoro

Email: delitaseptialti@gmail.com

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ABSTRAK

Pemilihan media yang sesuai dengan kondisi audiens atau penerima pesan menjadi salah satu faktor keberhasilan dalam pemberian pesan. Komik adalah salah satu media yang efektif bagi anak-anak. Dengan tampilan komik yang bergambar dan berwarna menjadi salah satu daya tarik bagi anak-anak. Selain itu bahasa komik yang sederhana dan cerita yang lucu membuat anak-anak tidak merasa bosan ketika membacanya. Penelitian ini bertujuan untuk mengetahui efektifitas komik dalam meningkatkan pengetahuan kesehatan pada remaja usia awal. Metode penelitian yang digunakan adalah literature riview terdapat 20 artikel yang sudah disaring berdasarkan kriteria inklusi dan eksklusi. Hasil penelitian menunjukkan bahwa penggunaan komik dapat meningkatkan pengetahuan kesehatan remaja, bahkan untuk materi yang dianggap sensitif. Komik menajdi inovasi dalam promosi kesehatan karena tidak membosankan bahasa komik cukup sederhana untuk dianalisis oleh remaja, meningkatkan motivasi belajar remaja karena tidak memberikan tekanan. Komik tidak hanya membantu remaja namun juga membantu pemberi materi dalam mempermudah penyampaian. Selain itu penerimaan dari remaja juga mendorong penggunaan komik sebagai media untuk belajar kesehatan. Sehingga dapat disimpulkan komik adalah inovasi dalam media kesehatan yang efektif dalam meningkatkan pengetahuan kesehatan remaja bahkan untuk tema yang sensitive. Disarankan untuk instansi kesehatan menggunakan komik sebagai media edukasi untuk mempermudah penyampaian materi.

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INTRODUCTION

Adolescence is a period of growth and development in humans, both physically and psychologically (Kartikasari, Ariwinanti, and Hapsari 2019). Many new things are being done by teenagers today, but because they have less control and knowledge, it causes various problems for teenagers. One of the problems related to adolescents is health problems (Puspasari, Sukamdi, and Emilia 2017). The results of a study at a school in Yogyakarta showed that only 9.1% of adolescents had good health knowledge (Kartikasari, Ariwinanti, and Hapsari 2019). In addition, the results of the 2017 IDHS also show that adolescent knowledge related to reproductive health is still low, this is evidenced by the high percentage of adolescents smoking (55%) and alcohol consumption (37%) (BKKBN 2017).

Health knowledge is very important for adolescents because it will help adolescents in making positive decisions about their lives. Knowledge is the basis for adolescents to behave, lack of knowledge will trigger various health problems (Yoon et al. 2021). Providing health knowledge from an early age can help adolescents reduce risky behavior due to following friends. The results of previous studies stated that 38.75% of adolescents had sexual behavior before marriage because they followed friends (Latifa and Aulia 2020), previous research conducted by Erna (2016) also stated that adolescents with friends who have risky behavior have the opportunity to follow the same behavior by 27,34 times, peers have a very strong influence on a person's behavior (Mesra and Fauziah 2016). Good knowledge related to health can help adolescents in forming positive health behaviors (Yoon et al. 2021).

Many factors that cause low knowledge of adolescent health are the information media used, the provision of health education in schools, and the role of parents (Thaha and Yani 2021). Efforts that can be made based on this factor is the selection of the right information media. The use of the right media increases the enthusiasm and motivation of teenagers to read (Putra and Milenia 2021). Media is a tool used to convey material to the recipient of the message so that the recipient of the message is easier to understand the information conveyed. Good media are media that have more than one sensor element to receive the message conveyed (Nurrita 2018; Pakpahan et al. 2020).

Comics have become one of the popular media lately, many teenagers and other readers are interested in reading comics on the grounds that reading comics is not as boring as reading books. Comics use everyday language so that it is easy for readers to understand and digest. Comics are interesting reading for all circles, both teenagers and adults because comics are packaged with funny images and characters so that they can be entertainment for readers from the humor (Boynton 2018; Celentano et al. 2021; Kilanowski 2020).

Reading interest in comics is the reason for teachers to design and develop learning materials using comics media to improve the reading and literacy skills of young people in Indonesia. Data from UNESCO states that reading interest in Indonesia is worrying, only reaching 0.001%, in addition to research conducted by Central Connecticut State University, Indonesia is ranked second last (Kementrian Komunikasi dan Informatika, 2022). The results of PISA 2018 show that the

average reading ability of students in Indonesia is far below the international average of 371:487, 30% of students in Indonesia are only at level 2 according to the OECD, and students are only able to find main ideas in simple texts (Schleicher 2019).

The use of comics is a wise choice, apart from being popular with teenagers, comics have interesting visual elements and comics can be obtained at a low cost (Ula, Kristanti, and Mursyidah 2019). Comics are pictures that are arranged in sequence to convey information. Comics are also defined as stories packed with cute cartoon characters and entertaining readers (Riwanto and Wulandari 2018). The pictures in the comics are equipped with word balloons in the form of dialogue between characters, and narrations that explain the background of the comics. The advantages of comics from an attractive appearance make comics suitable for learning media for children and adolescents (Kilanowski 2020). The purpose of this literature review is to study the effectiveness of using comics in increasing health knowledge among adolescents.

METHOD

This study aims to determine the effectiveness of using comics as a learning medium for teenagers using the literature review method. The research was conducted by collecting scientific articles published in Springer, Science Direct, Wiley Library, Scopus, BMC Public Health, and Google Scholar. The keywords used are "effective use of comics, use of comics in health, development of health comics for teenagers". The article collection process is focused on publications for 2018-2022, with both qualitative and quantitative methods, but does not include articles using a systematic or literature review method. The results of the synthesis of articles used in the study can be seen in the following figure. There are 300 search results articles and 100 articles for the last 5 years and 20 articles that meet the criteria in this study.

RESULTS

This study consisted of 20 articles that met the inclusion criteria. The articles used in this study consisted of 13 quasi-experimental studies, 4 research and development studies, and 3 studies using true experimental methods. Articles published between 2018-2022. The articles used in the study came from different countries Bolivia, America, Africa, Madagascar, Portugal, Korea, China, Egypt, and Indonesia. Comic respondents are teenagers aged 9-15 years, both respondents with a student population and respondents with an out-of-school population. Articles that pass the screening process are articles that discuss the effect of using comics on health knowledge for adolescents, and the effectiveness of comics as a medium for learning for adolescents, the authors did not choose a particular theme with the consideration that comics can be used for all aspects of health. The article has a clear discussion and literature review.

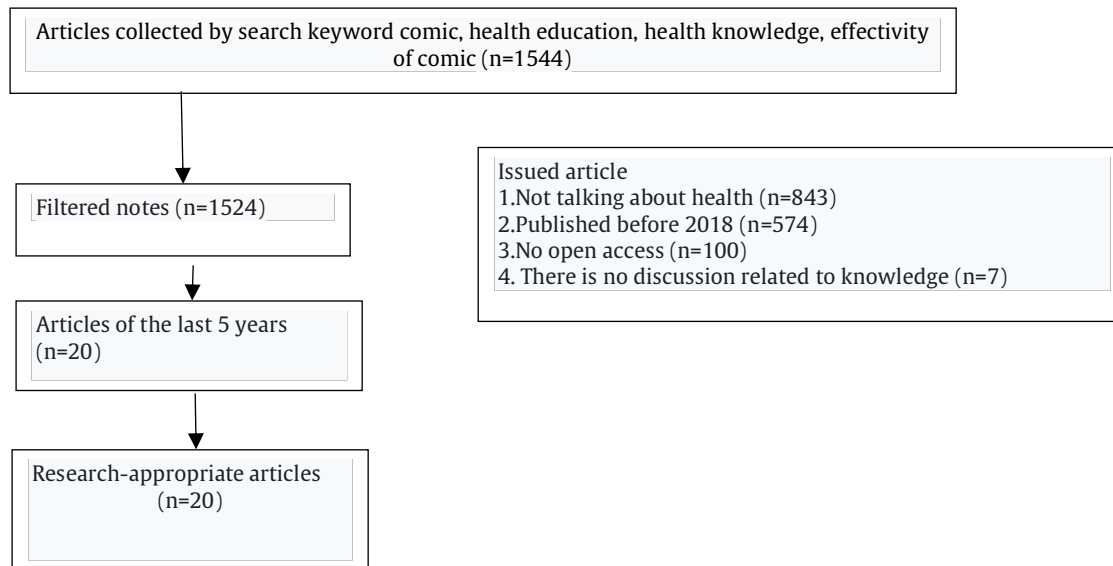


Figure 1. Results of Literature Selection

Based on the table above, we can see that 20 articles discuss the use of comics in increasing adolescent health knowledge, there are three research methods used, namely research and development, truly experimental, and quasi-experimental. The minimum intervention time was 6 weeks and the longest time was 6 months. All articles claim that comics can help increase youth knowledge. Apart from

comic books, there are also web comics and comic strips used in the intervention. The comic themes used in the intervention included epilepsy, obesity, HPV, COVID-19, Dental Health, DHF, HIV & AIDS, reproductive health, alcohol, health literacy and medication adherence, postoperative recovery, and balanced nutrition.

Tabel 1.
Riview artikel tentang efektifitas penggunaan komik dalam meningkatkan pengetahuan kesehatan remaja

No	Judul	Metode Penelitian	Hasil
1	Comic book-based educational program on epilepsy for high-school students: result from a pilot study in the Gran Chao Region, Bolivia	Quasi-experimental	After giving the intervention for 3 months there was an increase in knowledge, attitudes and behavior after being given an intervention using comics. Education using comics makes the teaching process easier for groups with weak economies.
2	Goal-setting for Healthy Eating in intervention INC: a web-base interactive Comic Toll to Decrease Obesity Risk Among Urban Minority Preadolescents	Trueexperimental	There was no statistically significant difference between black and white adolescents after both were given intervention through webcomics for 6 weeks. They have the same motivation and desire based on the instructions given on the web.
3	Development of a theory-based HPV vaccine promotion comic book for East African adolescents in the US	Research and development	Most of the teenagers gave a positive response to using comics as a promotional medium. Teenagers stated that they liked comics, comics were easy to read, comic illustrations were very good and it would be easy if they learned to use comics. Another opinion from teenagers stated that reading comics was fun, and it was easy to understand from the comics they were given to know that HPV is different from HIV. Teenagers like comics because they only focus on the core that teenagers need to understand. Based on research conducted, comics have become an innovation in health promotion media to provide education to teenagers on sensitive topics in a fun way.
4	The Impact of a Comic Book Intervention on East African-American Adolescent HPV Vaccine-Related Knowledge, Beliefs and Intentions	Research and development	Comic books have a positive effect on the knowledge and beliefs of adolescents about HPV and the HPV vaccine. Comic books can be used as a medium for health promotion. The results showed that after the intervention using comics, there was an increase in adolescents who wanted to get the HPV vaccine.
5	Efektivitas comic strip dan comic book terhadap perubahan pengetahuan remaja dalam pencegahan COVID-19 di kecamatan pulau punjung kabupaten dharmasraya	Quasy-experiment	There was no difference in the knowledge of adolescents who were intervenced using comic books and comic strips, but there were differences in attitude change. The increase in attitude in the intervention group using comic books was higher than comic strips. Comic books have a greater effect than comic strips in preventing COVID-19. Comics are an interesting medium to use in the intervention process.

6	Perbedaan penyuluhan menggunakan media komik dan media pameran terhadap pengetahuan tentang gigi berlubang pada murid kelas IV dan V SE suangi tiung banjarbaru Provinsi Kalimantan selatan.	Quasi-experiment	Based on the results of the study, there was an average increase in knowledge of 2.08 in the intervention group using comics, and 1.13 in the intervention group using exhibition media. The results of the analysis using the independent T-test showed that p-value $0.031 < 0.05$ there were differences in counseling using comics and exhibition media on dental health knowledge in adolescents, and comics were more effective than exhibition media.
7	Health Counseling for prevention and risk of DHF Disease in Manga and Infographics	True experiment	Visual media treatment provides an increase in information understanding, risk perception and systematic attitude towards the prevention of DHF. The most effective visual media is manga comics. Although infographics also have a positive effect, they have not been able to provide a systematic risk perception.
8	Effectiveness of the use comic media on increasing student knowledge about HIV & AIDS in junior high school 45 Sijunjung	True experimental	The results of the paired T-test showed a statistically significant difference between before and after being given an intervention using comics. The average knowledge of students about HIV increased from 10.41-to 13.23. There is an increase and statistical difference shows that comics influence students' knowledge.
9	Pengembangan modul komik pendidikan kesehatan reproduksi terhadap peningkatan pengetahuan dan sikap remaja tentang dampak seks pranikah di SMA N 2 Sisingamangaraja Kabupaten Buleleng Provinsi Bali	Quasi experiment	The increase in knowledge in the experimental group was higher (5.84-10.36) compared to the control group (4.47-6.65). The results of the Independent T-test showed a significant difference between the knowledge of the intervention group and the control group as well as attitudes. The provision of comics and leaflets about the impact of premarital sex influences the knowledge and attitudes of adolescents. However, the increase for the group given the comics is higher.
10	Media Komik Sebagai Alternatif media promosi kesehatan seksualitas remaja	Quasi experiment	The results of the analysis using the Wilcoxon sign test showed the value of $p = 0.000$ on the knowledge of adolescents before and after the intervention, $p = 0.023$ for sexual behavior, and $p = 0.000$ for subjective norms. Comics are an effective medium as an alternative to sexuality promotion media
11	Efektivitas media promosi kesehatan dalam peningkatan pengetahuan siswa terhadap bahaya seks bebas	Quasi-experimental	The increase in students' knowledge using comics was 5.46 while the increase in knowledge using leaflet media was 2.53. Comics are the most effective media in increasing knowledge because changes in knowledge scores using comics media are higher.
12	The Effectiveness of using electronic in Recognizing Causes, Signs, Symptoms Effort and Behaviors to Prevent Pathological Leucorrhea	Quasi-experimental	There was an increase in adolescent knowledge about vaginal discharge by 24.28% after being given an intervention using comic media. Comics can be an effective medium to increase students' knowledge regarding vaginal discharge in adolescent girls.
13	The use of comics to promote health awareness: A template using nonalcoholic fatty liver disease.	Research and development	The use of comics can help provide complex information verbally and visually, making it easier for teenagers to understand the material presented. The selection of good illustrations and characters can be an added value in using comics as a learning medium.
14	Effects of an educational comic book on epilepsy-related knowledge, attitude and practices among school children in Madagascar	Quasi-experimental	There is a significant increase in knowledge, attitudes and behavior in adolescents after reading comic books. teenagers stated that learning to use comics was fun, on average teenagers gave a positive response to the use of comics.
15	Development and evaluation of prenatal education for environmental health behaviour using cartoon comics	Quasi-experimental	After the intervention process for 3 months there was an increase in knowledge about environmental health in the control group and the intervention group. but the increase in the intervention group was higher. This study provides suggestions for using comic books in providing education related to environmental health.
16	Pendidikan kesehatan online menggunakan komik meningkatkan pengetahuan pencegahan COVID-19 pada siswa sekolah dasar	Quasi-experimental	The intervention was carried out online using the Zoom Meeting application. After the intervention process, there was an increase in knowledge from 78.6% to 100%. The results of statistical analysis using the Wilcoxon sign test showed a p-value > 0.05 so there was no difference in students' knowledge after intervention using comics. an increase in knowledge shows that comics are effective in increasing students' knowledge about COVID-19.
17	Improving health literacy and medication compliance through comic book: a quasi-experimental study of Chinese community.	Quasi-experimental	There was a significant increase in health literacy and medication adherence after being educated using comics. the use of comic books in health promotion is a good strategy to increase health literacy and medication adherence.
18	Effect of an educational comic story about preoperative orientation on information and anxiety level of children undergoing surgery	Quasi-experimental	There is a 3.2% reduction in respondents' fear after reading comics. There is a significant effect of the use of comics to increase the knowledge of research respondents

19	Pengembangan media komik tentang pentingnya gizi seimbang untuk anak usia sekolah di SD Negeri 2 Tegalarjo	Research and Development	The results of the analysis showed a positive response from students who read the comics given. After testing and evaluation, the average score of students was 89.7% categorized as very good, the acquisition of a good score after being given comics showed that comics were worthy of being used as learning media for teenagers.
20	The effectiveness of comic as learning media to enhance knowledge of menarche and menstruation among female students in Yogyakarta	Quasi-experimental	There was an increase in knowledge in the group who intervened with comics with an average of (53.30) and leaflets (38.08). The results of the statistical analysis also showed a p-value < 0.05, so it was concluded that there was a significant difference between the knowledge of adolescents who were intervened using comics and adolescents who were intervened using leaflets. This study concludes that comics are more effective in increasing health knowledge about menarche in adolescent girls than leaflets.

DISCUSSION

The Effect of Using Comic Books on Changes in Health Knowledge in Adolescents

Based on the results of a review of 20 articles, 14 articles stated that there was an increase in adolescent health knowledge after being given health education using comic media (Chen et al. 2020; Cicero et al. 2020; Eravianti, Yusefni, and Aufa Firji 2021a; Kim et al. 2021; Kumalasi, Ridawuti, and Jayu 2022; Kusumawati and Listiana 2022; Manalu et al. 2020; Mioramalala et al. 2021; Nasution, Sadono, and Wibowo 2018; Novela, Krisdian, and Susanty 2021; Nuraini and Ronoatmodjo 2018; Rohayati, Iswari, and Pradana 2021; Rusyadi, Said, and Ulfah 2020; Shin et al. 2022; Subroto, Qohar, and Dwiyanana 2020). The use of comics as a medium for learning helps make it easier for students to understand the material given. The simplicity of the language used in comics makes students, not bored reading comics (Celentano et al. 2021). Comics have an attractive appearance so that they are loved by readers, research results (Elanda, 2020) state that 55% of students choose comics to be used as a medium for learning mathematics at school, and 88.58% of students show a positive interest in the comics presented in. The components that comics have to make things that were originally difficult become easier (Subroto, Qohar, and Dwiyanana 2020).

This research is in line with research conducted by Mawan (2018) which states that there is an increase in the effectiveness of learning about energy saving using comics as a learning medium. This research was conducted with a quasi-experimental one-group pre-posttest. The results of the paired T-Test analysis showed a p-value < 0.05 and the correlation value showed a strong correlation (Riwanto and Wulandari 2018). The same research also conducted by Arina (2017) stated that comics were effective in increasing the geography knowledge of class X students with the theme of the Water Cycle, the use of comics showed that students' learning completeness reached 81.56%. Learning to use comics is very effective compared to using text books (Sholiha, Tukidi, and Sriyanto 2017).

The Effectiveness of Using Comics as Learning Media

Comics become an interesting medium in the process of providing education to teenagers so that education using comics does not give pressure that makes teenagers lazy and feel burdened to learn. Comics are not only liked by teenagers but also liked by children and even adults, not a few people make reading comics a hobby. The use of comic media in the learning process can be a motivation for teenagers in learning. When compared to using conventional

books, learning to use comics will be more interesting (Putra and Milenia 2021).

Comics are of promotional media that are composed of a series of illustrations in the form of pictures and writing in the form of conversations that are displayed continuously between one another. In general, comics are displayed per panel to separate the setting of time, place, and atmosphere from the stories that are composed. Comics can also be defined as a sequence of images arranged aesthetically, comics tend to contain jokes. Comics are divided into comic strips and comic books. Comic strips usually only consist of a few sheets and are published in certain magazines, while comic books are comics that are designed to be a book (Gumelar 2014).

Of the 20 articles analyzed, there was 1 article that used comic strips as a medium for health education, the research conducted stated that comic strips were effective in the educational process about COVID-19. The results showed that there was no significant difference between respondents who were intervened with comic strips and comic books. However, if you look at the change in the average value, the increase in the group using comic books is higher than in comic strips (Novela, Krisdian, and Susanty 2021). The use of comic strips that are often displayed with a small number of pages is a motivation for students to read them. Research conducted by Utami (2020) states that comic strips can be used as a medium for learning Indonesian during the COVID-19 pandemic. In addition, previous research on the use of comic strips as a learning medium stated that comic strips were appropriate to be used as a medium for learning because students could learn indirectly and unconsciously. So that learning using comic strips does not burden students. The researcher stated that students tend to be more enthusiastic about learning after using comic strips (Pramesti, Sunendar, and ... 2020; Pritandhari 2016).

Along with the development of the current era, there are web-based comics, comics are published on a special platform for comics or on certain websites. The use of webcomics is quite effective for the current generation of teenagers who prefer to play with gadgets rather than read books. In addition, currently, internet access is also smooth, the average student already has a smartphone that can be used to access web comics. Previous research conducted by (Harismawan, 2020) stated that online comics or webcomics are very effective in learning history. However, the use of webcomics must pay attention to the audience and need further analysis of the use of webcomics as learning media (Harismawan 2020).

Based on the literature review, there are two comics published online, or using webcomics as an intervention medium. The results showed an increase in health

knowledge among adolescents after being intervened using webcomics, but statistical analysis stated that there was no significant difference between knowledge before and after being given the intervention. The effectiveness of webcomics is seen in the increase in students' grades and understanding after the intervention (Dublin et al. 2019; Rohayati, Iswari, and Pradana 2021). Other research on the use of webcomics has also been conducted (Davi dkk, 2022) stating that the use of webcomics is effective in learning mathematics at SMP Muhammadiyah 13 Surabaya, the use of web comics not only helps students but also helps teachers in the learning process. The use of webcomics shows the average effectiveness of teachers to manage learning is 95%. Another similar research on the effectiveness of the use of webcomics was also conducted by (Kurniawan, 2017) regarding the use of webcomics as a medium for learning Fiqh subjects in class VIII students, the results showed that the average score of students who were given web comics was higher (75.5). compared to students who were not given webcomics (68,48). Learning using webcomics is more effective than learning without comics (Kurniawan, Marwan, and Manan 2017; Maya Maghrobi Arum, Suryaningtyas, and Soemantri 2021).

Based on the literature review, there are 17 comic books used in the intervention process, the results of the study show that comics are an effective media used as a learning medium. Comic books are one of the innovations in health education. Learning to use comics can be done more casually and simply, learning to use comics can simplify material that is considered complex, for example, sensitive material such as menarche in adolescent girls, prevention of vaginal discharge, trust in vaccines, the dangers of free sex, and other sensitive behaviors. The use of comics makes the material simpler to explain (Ariana and Heri 2018; Eravianti, Yusefni, and Aufa Firji 2021b; Eravianti, Yusefni, and Fijri 2021; Kumalasi, Ridawuti, and Jayu 2022; Kusumawati and Listiana 2022; Manalu et al. 2020; Nuraini and Ronoatmodjo 2018; Wulandari et al. 2020).

Based on the three types of comics used, comic books, comic strips, and webcomics, comic books are the media that have the highest effect on changes in health knowledge among adolescents. Based on research by Vina (2021) learning to use comic books is more effective in preventing COVID-19. When viewed statistically, there was no difference in knowledge between the comic strip intervention group and the comic book group, but when viewed from the difference in value, the increase in the comic book group was higher. In addition, based on the research conducted, there are differences in attitudes between the comic strip group and the comic book group. A similar study was conducted by Andini et al (2018) regarding the influence of comic media on changes in junior high school students' knowledge about balanced nutrition. The results of the study stated that there was a significant difference in the group using comic books. Comic books can contain more detailed material and stories when compared to comic strips so that respondents gain more understanding. (Andini Dhea, Mury Kuswari 2018). Comic books are more effective as a medium than web comics for certain groups, the use of web comics requires smooth internet facilities. So that the use of comic books is more efficient and effective to use compared to web comics (Kurniawan, Marwan, and Manan 2017).

Media is a tool for delivering messages from informants to the audience, the aim is to facilitate the process of delivering information. Media can be in the form of print or electronic media, which are included in the category of print

media in the form of booklets, leaflets, rubiks, and posters. Meanwhile, electronic media can be in the form of TV, radio, film, video, cassette, CD, and VCD. In addition, there are outdoor media such as billboards (Jatmika et al. 2019). In this literature review, there is the use of leaflets and infographics media whose use is compared to comics. Based on the analysis conducted from the three media, comics are more effective than the other two media. Comics are considered more effective than infographics based on research conducted by Shinta (2018) which states that the use of comics is more effective in increasing risk perceptions for the prevention of dengue disease (Nasution, Sadono, and Wibowo 2018). 3 studies compare the use of leaflets, based on the results of the analysis that comics are more effective than leaflets as health learning media. The research on the impact of premarital sex stated that the increase in knowledge of the group given comics experienced a higher increase in knowledge in the group given leaflets (10.36:5.84), besides that the results of the statistical analysis also showed significant differences between the groups who were intervened using comics and using comics. leaflet (p-value < 0.05) (Wulandari et al. 2020). Subsequent research also stated that the increase in knowledge of using comics was higher (5.46) than leaflets (2.53). Researchers state that comics are the best media for increasing knowledge about the dangers of free sex for adolescents (Manalu et al. 2020). The third study also showed that comics were more effective than leaflets in increasing adolescent knowledge about menarche in young women (Nuraini and Ronoatmodjo 2018).

CONCLUSIONS AND SUGGESTIONS

Comics are one of the effective innovations and are used in health learning media for adolescents. Based on the results of research, comic media can increase adolescent health knowledge. In addition to seeing the increase in adolescent knowledge, it can also be seen from the response of adolescents to the use of comics as a medium for learning. Teenagers stated that comics are very fun to read, reading comics does not give a bored effect, teenagers feel relaxed to follow comic stories, besides that teenagers also state that learning to use comics can be directly at the core of the material learned based on stories so that it is easier for readers. Although there are teenagers who show negative responses such as they feel confused to read the writings which are sometimes not in order and neatly arranged, only a few teenagers give negative responses to the use of comics. Comics not only make it easier for readers but also make it easier for teachers or researchers to convey the meaning of learning, especially for sensitive material. Health and education agencies can use comics as a medium for learning because of the advantages that comics provide in providing education to teenagers.

REFERENCES

- Andini Dhea, Mury Kuswari, N. 2018. "Pengaruh Pemberian Media Komik Gizi Seimbang Terhadap Perubahan Pengetahuan Dan Sikap Pada Remaja Di SMPN 16 Jakarta."
- Ariana, agus putu, and Mochamad Heri. 2018. "Pengembangan Modul Komik Pendidikan Kesehatan Reproduksi Terhadap Peningkatan Pengetahuan Dan Sikap Remaja Tentang

- Dampak Seks Pranikah Di SMA 2 Singamaraja Kabupaten Buleleng Provinsi Bali." *kesehatan MIDWIERSLION* 3(1): 23–32.
- BKKBN. 2017. "Kesehatan Reproduksi Remaja 2017." *Badan Kependudukan dan Keluarga Berencana Nasional*: 1–606. <http://www.dhsprogram.com>.
- Boynton, Petra. 2018. "Using Comics to Change Lives." *The Lancet* 391(10115): 19–20. [http://dx.doi.org/10.1016/S0140-6736\(17\)33258-0](http://dx.doi.org/10.1016/S0140-6736(17)33258-0).
- Celentano, Isabelle et al. 2021. "Development of a Theory-Based HPV Vaccine Promotion Comic Book for East African Adolescents in the US." *BMC Public Health* 21(1): 1–12.
- Chen, Hui et al. 2020. "Effect of an Educational Intervention on Human Papillomavirus (HPV) Knowledge and Attitudes towards HPV Vaccines among Healthcare Workers (HCWs) in Western China." *Human Vaccines and Immunotherapeutics*: 1–8.
- Cicero, Calogero Edoardo et al. 2020. "Comic Book-Based Educational Program on Epilepsy for High-School Students: Results from a Pilot Study in the Gran Chaco Region, Bolivia." *Epilepsy and Behavior* 107.
- Dublin, M. et al. 2019. "Goal-Setting for Healthy Eating In Intervention INC: A Web-Based Interactive Comic Tool to Decrease Obesity Risk Among Urban Minority Preadolescents." *Journal of the Academy of Nutrition and Dietetics* 119(9): A75. <https://doi.org/10.1016/j.jand.2019.06.220>.
- Eravianti, Elda Yusefni, and Firsta Aufa Firji. 2021a. "Efektivitas Penggunaan Media Komik Terhadap Peningkatan Pengetahuan Siswa Tentang HIV/ AIDS Di SMPN 45 Kabupaten Sijunjung." *Jurnal Kesehatan Medika Sainatika* 12(1): 79–82. <http://dx.doi.org/10.30633/jkms.v12i1.1116>.
- . 2021b. "Effectiveness of the Use Of Comic Media On Increasing Student Knowledge About Hiv/ Aids In Junior High School 45 Sijunjung." *Jurnal Kesehatan Medika Sainatika* 12: 79–82.
- Eravianti, Elda Yusefni, and Firsta Aufa Fijri. 2021. "Efektivitas Penggunaan Media Komik Terhadap Peningkatan Pengetahuan Siswa Tentang HIV/AIDS Di SMPN 45 Kabupaten Sijunjung." *Jurnal Kesehatan Medika Sainatika* 12(1): 79–82.
- Gumelar, M.S. 2014. *Comic Making*. Bahasa Ind. ed. Bambang SARwiji S.E. Jakarta Barat: Permata Puri Media. <https://play.google.com/books/reader?id=xLcuDwAAQBAJ&hl=id&printsec=frontcover&pg=GBS.PR4>.
- Harismawan, Wildana. 2020. "Penggunaan Komik Berbasis Web Pada Pelajaran Sejarah Siswa SMA The Use of Web-Based Comics in High School History Subjects." *Indonesian Journal of Instructional Media and Model* 2(1): 40–50. <http://journal.univetbantara.ac.id/index.php/ijimm/article/view/634>.
- Informatika, Kementerian Komunikasi dan. 2022. "Teknologi Masyarakat Indonesia: Malas Baca Tapi Cerewet Di Medsos." https://www.kominfo.go.id/content/detail/10862/teknologi-masyarakat-indonesia-malas-baca-tapi-cerewet-di-medsos/0/sorotan_media (May 15, 2022).
- Jatmika, Septian Emma Dwi, Muchsin Maulana, Kuntoro, and Santi Martini. 2019. *Buku Ajar Pengembangan Media Promosi Kesehatan*. Yogyakarta: K. Media.
- Kartikasari, Dhian, Desi Ariwinanti, and Anindya Hapsari. 2019. "Gambaran Pengetahuan Kesehatan Reproduksi Siswa Smk Wisnuwardhana Kota Malang." *Preventia: The Indonesian Journal of Public Health* 4(1): 36.
- Kilanowski, Jill F. 2020. "Agricultural Safety Comic Book for Latinx Migrant Families: Development and Evaluation." *Journal of Pediatric Health Care* 34(3): 230–38.
- Kim, Hyun Kyoung, Hee Kyung Kim, Mirim Kim, and Seohwa Park. 2021. "Development and Evaluation of Prenatal Education for Environmental Health Behavior Using Cartoon Comics." *Journal of Korean Academy of Nursing* 51(4): 478. <https://jkan.or.kr/DOLx.php?id=10.4040/jkan.21083>.
- Kumalasi, Intan, Indah Dewi Ridawuti, and Herawati Jayu. 2022. "Efektifitas Pemanfaat Komik Elektronik Dalam Mengenal Penyebab, Tanda, Gejala Upaya Dan Perilaku Pencegahan Keputihan Patologis." *KESKOM* 8(1): 102–8.
- Kurniawan, Bayu, Iwan Marwan, and Abdul Manan. 2017. "Efektivitas Media Pembelajaran E-Comic." *Edudeena* 1: 1–8. <https://jurnal.iainkediri.ac.id/index.php/edudeena/article/view/442>.
- Kusumawati, Rindha Mareta, and Listiana. 2022. "Media Komik Sebagai Alternatif Media Promosi Kesehatan Seksualitas Remaja." *Jurnal Ilmiah Kesehatan* 21(1): 14–19.
- Latifa, Siti, and Resky Aulia. 2020. "Pengaruh Teman Sebaya Terhadap Perilaku Remaja Seksual Di Sma Negeri 1 Parepare." *Jurnal Ilmiah Manusia dan Kesehatan* 3(3): 403–10.
- Manalu, Putranto et al. 2020. "Efektivitas Media Promosi Kesehatan Dalam Peningkatan Pengetahuan Siswa Tentang Bahaya Seks Bebas." *jurnal jumantik* 5(2).
- Maya Maghrobi Arum, Davi, Wahyuni Suryaningtyas, and Sandha Soemantri. 2021. "Efektivitas Komik Digital Sebagai Media Pembelajaran Daring Pada Materi Sistem Persamaan Linear Dua Variabel." *Journal of Education and Teaching (JET)* 3(1): 24–36.
- Mesra, Erna, and Fauziah. 2016. "Pengaruh Teman Sebaya Terhadap Perilaku Seksual Remaja." *Jurnal Ilmiah Bidan* 1(2): 34–41.
- Mioramalala, Sedera Aurélien et al. 2021. "Effects of an Educational Comic Book on Epilepsy-Related Knowledge, Attitudes and Practices among Schoolchildren in Madagascar." *Epilepsy Research* 176(August).
- Nasution, Shinta, Dwi Sadono, and Cahyono Tri Wibowo. 2018. "Penyuluhan Kesehatan Untuk Pencegahan Dan Risiko Penyakit DBD Dalam Manga Dan Infografis." *Jurnal Penyuluhan* 14(1).
- Novela, Vina, Moonic Krisdian, and Shantrya Dhelly Susanty. 2021. "Efektivitas Comic Strip Dan Comic Book Terhadap Perubahan Pengetahuan Remaja Dalam Pencegahan COVID-19 Di Kecamatan Pulau Punjung Kabupaten Dharmasraya." *Jurnal Public Health* 8(2): 43–53.
- Nuraini, Annisa, and Sudarto Ronoatmodjo. 2018. "The Effectiveness of Comic as Learning Media to Enhance Knowledge of Menarche and Menstruation among Female Students in Yogyakarta." *Journal of Health Promotion and Behavior* 3(4): 257–62.
- Nurrita, Teni. 2018. "Pengembangan Media Pembelajaran Untuk Meningkatkan Hasil Belajar Siswa." *MISYKAT: Jurnal Ilmu-ilmu Al-Quran, Hadist, Syari' ah dan Tarbiyah* 3(1): 171.
- Pakpahan, Andrew Fernando et al. 2020. *Pengembangan Media Pembelajaran*. I. Yayasan Kita Menulis.
- Pramesti, U D, D Sunendar, and ... 2020. "Komik Strip Sebagai Media Pendidikan Literasi Kesehatan Dalam Pembelajaran

- Bahasa Indonesia Pada Masa Pandemi COVID-19." *Bahterasia: Jurnal Ilmiah* ... 1(3): 45–54. <http://jurnal.umsu.ac.id/index.php/BAHTERASIA/article/view/5135>.
- Pritandhari, Meyta. 2016. "Penerapan Komik Strip Sebagai Media Pembelajaran Mata Kuliah Manajemen Keuangan Mahasiswa Universitas Muhammadiyah Metro." *Jurnal Pendidikan Ekonomi UM Metro* 4(2): 1–7.
- Puspasari, Sukamdi, and Ova Emilia. 2017. "Paparasi Informasi Kesehatan Reproduksi Melalui Media Pada Perilaku Seksual Pranikah: Analisis Data Survei Demografi Kesehatan Indonesia 2012." *BKM Journal of Community Medicine and Public Health* 33(1): 31–36.
- Putra, Aan, and Ines Feltia Milenia. 2021. "Systematic Literature Review: Media Komik Dalam Pembelajaran Matematika." *Mathema: Jurnal Pendidikan Matematika* 3(1): 30.
- Riwanto, Mawan Akhir, and Mey Prihandani Wulandari. 2018. "Efektivitas Penggunaan Media Komik Digital (Cartoon Story Maker) Dalam Pembelajaran Tema Selalu Berhemat Energi." *Jurnal PANCAR* 2(1): 14–18.
- Rohayati, Yeni Iswari, and Anung Ahadi Pradana. 2021. "Pendidikan Kesehatan Online Menggunakan Komik Meningkatkan Pengetahuan Pencegahan COVID-19 Pada Siswa Sekolah Dasar." *Jurnal Mitra Masyarakat* 2(Vol. 2 No. 1 (2021): Jurnal Mitra Masyarakat): 70–78. <http://jmm.stikesmitrakeluarga.ac.id/ojs/index.php/jmm/article/view/55>.
- Rusyadi, M A, F Said, and R Ulfah. 2020. "Perbedaan Penyuluhan Menggunakan Media Komik Dan Media Pameran Terhadap Pengetahuan Tentang Gigi Berlubang Pada Murid" *Jurnal Terapis* ...: 1–6. <http://www.jurnal-terapisgigimulut.com/index.php/kepgibjm/article/view/9>.
- Schleicher, Andreas. 2019. "PISA 2018: Insights and Interpretations." *OECD Publishing*: 64. https://www.oecd.org/pisa/PISA_2018_Insights_and_Interpretations_FINAL.PDF.pdf.
- Shin, Michelle B. et al. 2022. "The Impact of a Comic Book Intervention on East African-American Adolescents' HPV Vaccine-Related Knowledge, Beliefs and Intentions." *Journal of Immigrant and Minority Health*. <https://doi.org/10.1007/s10903-022-01359-z>.
- Sholihah, Arina, Tukidi Tukidi, and Sriyanto Sriyanto. 2017. "Efektivitas Pembelajaran Geografi Pokok Bahasan Siklus Air Dengan Menggunakan Media Komik Strip Pada Siswa Kelas X IPS MAN Purwodadi." *Journal Edu Geography* 5(3): 134–41. <http://lib.unnes.ac.id/31728/>.
- Subroto, Erlanda Nathasia, Abd. Qohar, and Dwiyanah. 2020. "Efektivitas Pemanfaatan Komik Sebagai Media Pembelajaran Matematika." *Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan* 5(2006): 135–41. <file:///C:/Users/LENOVO/AppData/Local/Temp/13156-19771-1-SM.pdf>.
- Thaha, Rezky Yuliana, and Resty Yani. 2021. "Faktor-Faktor Yang Mempengaruhi Pengetahuan Remaja Tentang Kesehatan Reproduksi Di SMPN 1 Buntao Kabupaten Toraja Utara Factors Affecting Adolescent Knowledge About Reproductive Health at SMPN 1 Buntao , North Toraja Regency." *Jurnal Komunitas Kesehatan Masyarakat* 3(September): 52–74.
- Ula, rifatul, Febriana Kristanti, and Himmatul Mursyidah. 2019. "Efektivitas Pembelajaran Discovery Learning Dengan Media Komik Pada Pembelajaran Garis Dan Sudut Di Smp Negeri 7 Surabaya (Effectiveness Of Discovery Learning With Comic Media On Line And Corner Learning In Smp Negeri 7 Surabaya)." *Jurnal Matematika dan Pendidikan Matematika* 4(1): 1–12.
- Wulandari, Ni Ketut Ayu, Luh Ayu Purnami, Agus K Rubaya, and Made Yos Kresnayana. 2020. "Pengembangan Modul Komik Pendidikan Kesehatan Reproduksi Terhadap Peningkatan Pengetahuan Dan Sikap Remaja Tentang Dampak Seks Pranikah Di SMAN 2 Singaraja Kabupaten Buleleng Provinsi Bali." *Jurnal Kesehatan MIDWINERSLION* 5(1): 176–83.
- Yoon, Sangchul et al. 2021. "Effects of Health Education on Adolescents' Non-Cognitive Skills, Life Satisfaction and Aspirations, and Health-Related Quality of Life: A Cluster-Randomized Controlled Trial in Vietnam." *PLoS ONE* 16(12 December): 1–18. <http://dx.doi.org/10.1371/journal.pone.0259000>.