ASPI | Afarand Scholarly Publishing Institute; Turkey
ISSN: 2345-2897; Health Education and Health Promotion. 2023;11(4):615-620. 10.58209/hehp.11.4.615

# Effectiveness of Health Education Using Digital Comic Media in Enhancing Adolescents'

ARTICLE INFO

***Article Type***
Original Research

***Authors***
Triana W.[1]* *MSc*
Veriza E.[1] *MKM*
Almuhaimin A.[1] *MSc*
Hartati Y.[2] *MSc*
Rusmini R.[2] *MSc*

**How to cite this article**
Triana W, Veriza E, Almuhaimin A, Hartati Y, Rusmini R. Effectiveness of Health Education Using Digital Comic Media in Enhancing Adolescents' Reproductive Health Behavior. Health Education and Health Promotion. 2023;11(4):615-620.

[1]Health Promotion Department, Health Polytechnic of Ministry of Health Jambi, Jambi, Indonesia
[2]Nutrition Department, Health Polytechnic of Ministry of Health Palembang, Palembang, Indonesia

***Correspondence***
*Address:* Siwabessy No.42, Buluran Kenali, Kec. Telanaipura, Kota Jambi, Health Polytechnic of Jambi, Jambi 36122, Indonesia. Postal Code: 36122
*Phone:* +62 813-6600-0615
*Fax:* -
trianawinda146@gmail.com

***Article History***
Received: September 17, 2023
Accepted: October 23, 2023
ePublished: October 30, 2023

ABSTRACT

**Aims** Modernization and globalization have rendered teenagers susceptible to environmental influences, including risky sexual behaviors. Comic media, serving as a graphic medium, functions as a tool for simplifying complex topics, instilling value, captivating interest and attention, aiding in data interpretation, and condensing information. This research aimed to assess the effectiveness of health education utilizing digital comic media in promoting healthy reproductive behavior among adolescents.

**Materials & Methods** This quasi-experimental research with a one-group pre-test-post-test design was done on 100 students. Statistical analysis was done using SPSS 16 by the Wilcoxon test.

**Findings** There was an improvement of 3.2 in the behavior mean score from the pre-test to the post-test. The results of bivariate analysis using the Wilcoxon test on pre-test and post-test respondents revealed a p-value of 0.0001, which was less than 0.05. Therefore, there was a significant difference in knowledge and behavior between the pre-training and post-training stages using digital comics.

**Conclusion** Health education delivered through digital comic media has a substantial impact on students' knowledge and behavior, thereby contributing to the enhancement of healthy reproductive practices among teenagers at SMA N 01 Muaro Jambi.

**Keywords** Knowledge; Behavior; Digital Technology; Healthy reproduction

CITATION LINKS

[1] Adolescent Reproductive ... [2] Determinants of Pre-Marital Sexual Behavior of Male Adolescents in Indonesia, IDHS ... [3] Reproductive Health Education for ... [4] Reproductive Health Education ... [5] Key populations and Sub-Saharan Africa's HIV ... [6] Analysis of condom use behavior, number of partners, and injecting drugs with the incidence of hiv/aids in indonesia: A systematic review and ... [7] Recent Increase in HIV cases ... [8] Jambi City Health ... [9] In Christianity and Islam: John Gill's Hermeneutical Perspective and ... [10] Comic Media as an Alternative Media for Promotion of Adolescent Sexuality ... [11] Teen sex education media: A case study vocational high school 3 purbalingga ... [12] Effects of a peer-led media literacy curriculum on adolescents' knowledge and attitudes toward sexual behavior and media ... [13] The effectiveness of using entertainment education narratives to promote safer sexual behaviors of youth: A meta-analysis, ... [14] Youth sexual behaviour and ... [15] The influence of presenting material in the form of comic media on reading interest and ... [16] Health effects of media on children and ...[17] Designing illustrative social media stories to promote adolescent peer support and healthy sexual ... [18] Use of Comic Media in Qiro'Ah ... [19] Does parental mediation of media influence child outcomes? A meta-analysis on media time, aggression, substance use, and sexual ... [20] Media and technology in adolescent sexual education and ... [21] Sample size determination in health studies: A practical ... [22] Communication interventions to promote the public's awareness of antibiotics: a systematic ... [23] Improving the hard skills and soft skills of MADRASAH teachers for dealing ASEAN economic community ... [24] Reproductive health ... [25] Adolescent reproductive health in ... [26] Boys will be boys and girls better be prepared: An analysis of the rare sexual health messages in young adolescents' ... [27] Use of Comic Media in Qiro'Ah ...[28] Towards a psycho-social theoretical framework for sexual health ... [29] "Peer" educator initiatives for adolescent reproductive health projects in ... [30] Empowering youth for social change through the Shujaaz multimedia platform in ... [31] Character education based on digital comic ...

## Introduction

Currently, Indonesia's teenage population has reached 65 million individuals, accounting for 30% of the country's total population [1]. The significant number of teenagers in Indonesia is accompanied by a myriad of issues they encounter. Among these adolescent challenges, sexuality-related matters are the most prominent and have garnered substantial attention from various stakeholders [2, 3]. According to the 2018 Jambi Province Riskesdas report, teenagers' lack of reproductive health information is a contributing factor to problems related to early marriages, unwanted pregnancies, tobacco and alcohol use, as well as HIV-AIDS [4].

One of the most pressing issues facing today's teenagers revolves around sexuality, encompassing instances of premarital pregnancies and abortions. Additionally, teenagers are vulnerable to sexually transmitted infections (STIs), HIV, AIDS, and substance abuse [5, 6]. According to the World Health Organization (WHO), there were 38.4 million HIV/AIDS cases in 2021 worldwide [7]. Data from the Ministry of Health (Kemenkes) for 2021 revealed 36,902 cases of HIV, with the majority of patients falling within the productive age bracket. Specifically, most HIV cases occurred among individuals aged 25-49, constituting 69.7% of cases. The 20-24 age group accounted for 16.9%, while those over 50 represented 8.1%. A noteworthy 3.1% of HIV cases were reported among individuals aged 15-19 years [8]. The Indonesian Pediatrician Association (IDAI) projected that around 1,188 children in Indonesia would test positive for HIV in 2022 [9].

Ansari *et al.* [10], suggested that one effective medium for promoting healthy reproductive health among teenagers is comics. Comics offer a straightforward, easily comprehensible format. Furthermore, comics possess an inherent appeal, ensuring that the intended message and information are readily accepted without coming across as condescending. During adolescence, communication becomes more effective when conveyed through engaging mediums. In this context, young teenagers exhibit a heightened interest in visual messages, making comic media an ideal platform for disseminating information [11-14].

Suparman *et al.* [15] revealed a noticeable distinction between counseling or educational approaches using written media and those employing pictorial/illustrative media, such as comics when it comes to enhancing knowledge. The utilization of comic media for message delivery has proven to be remarkably effective in augmenting students' knowledge. Comic media possesses the ability to captivate students' interest while aiding in their comprehension of educational material [16, 17].

This perspective is confirmed by a similar viewpoint by Gufron [18]; comics serve as a medium that is simple, lucid, and readily comprehensible, thus making them a valuable tool for conveying information and knowledge. Furthermore, comics boast an innate allure that renders the conveyed message easily digestible and comprehensible, all without seeming condescending [19, 20].

An initial survey conducted with ten students at SMAN 01 Muaro Jambi concerning adolescent reproductive health matters including topics, such as sexuality, HIV/AIDS, and drug awareness, unveiled some striking insights. The survey disclosed that seven out of the ten interviewed students lacked knowledge regarding healthy reproduction.

Reproductive health, often viewed through a narrow lens solely associated with sexual relations, was perceived as a taboo subject.

However, it is essential to emphasize that reproductive health encompasses a broad spectrum, including the reproductive system, its functions and processes, and education related to menstruation, STIs, and various other aspects.

The research team was motivated by the significant number of adolescents who lacked a proper understanding of reproductive health, a factor contributing to the high rates of both drug abuse and abortion among this population. We assessed the efficacy of health education delivered through digital comic media in enhancing healthy reproductive behaviors among adolescents.

## Materials and Methods

### Study Design and Participants

This quasi-experimental research employing a one-group pre-test-post-test design was conducted at SMAN 01 Muaro Jambi, Indonesia from May 12$^{th}$ to June 25$^{th}$, 2023. Data collection was performed in person through the administration of a questionnaire. According to the data gathered by the research team, SMAN 01 Muaro Jambi had a total student population of 746 students. A sample of 100 students was selected, meeting specific inclusion criteria: students in grades X and XI who possessed an Android cellphone and consented to participate as respondents.

### Sample Size

A total of 100 students were calculated using Slovin's formula at $\alpha$=0.05 [21], and the total population was considered to be 158 people.

### Study Variables

The dependent variable was the knowledge and behavior of adolescents regarding reproductive health. The knowledge variable encompasses ten questions covering topics, such as the understanding of reproductive health, the anatomy and physiology of reproductive organs in both males and females, the fertile period in adolescents for both genders, indicators of maturity in adolescents, and STIs.

The assessment of knowledge involves assigning a score of one for correct answers and a score of zero for incorrect responses, resulting in a score ranging from 0 to 15. A score exceeding seven falls within the

"good" category, while a score of seven or lower falls into the "not good" category.

The behavioral variable includes inquiries related to risky behaviors among adolescents and methods to prevent risky sexual behavior. These questions encompass both positive and negative aspects of behavior.

**Data Collection**

Data collection was conducted through the distribution of questionnaires on knowledge [22] with a Cronbach's alpha value of 0.880 and behavior [23] with a Cronbach's alpha value of 0.771. Each variable comprised ten questions, which were thoroughly tested on a sample of 15 students and subsequently confirmed as valid following necessary revisions. The participants who willingly completed the questionnaires had previously provided informed consent for their involvement in the research.

To aid in the research process, three students from the Jambi Ministry of Health Polytechnic were enlisted and trained to administer and explain the questionnaire to the study participants.

**Data Analysis**

For data analysis, the non-parametric Wilcoxon test was employed due to the non-normal distribution of the data. This test was used to assess the impact of the intervention on students' knowledge and behavior. All data analyses were performed using SPSS version 16.0 software, with statistical significance determined at a p-value threshold of <0.05. Numerical data are represented as mean values, standard deviation (SD), and the range of maximum and minimum values for each variable (both pre- and post-test).

**Ethical Considerations**

This research was approved by the Health Polytechnic of Jambi, Jambi Province, Indonesia (LB.02.06/2/865/2023).

## Findings

Table 1 revealed that prior to the educational intervention, 55% possessed good knowledge compared to 45% with poor knowledge. After the intervention, the number of individuals with poor knowledge decreased to 44%, and those with good knowledge increased to 68%. In terms of behavior, 60% displayed good behavior before the education, while 40% exhibited poor behavior. Following the educational program, the number of students with poor behavior decreased to 20%, and those with good behavior increased significantly to 80%.

**Table 1.** Frequency of respondents based on knowledge before and after education

| Parameter | Pre-test | Post-test |
|---|---|---|
| **Knowledge** | | |
| Poor | 55(55) | 44(44) |
| Good | 45(45) | 68(68) |
| **Behavior** | | |
| Poor | 60(60) | 20(20) |
| Good | 40(40) | 80(80) |

Table 2 indicates that the Kolmogorov-Smirnov results was significant for both knowledge and behavior, both in the pre- and post-test phases of comic-based education. Each of these values was less than 0.05, signifying that the data for knowledge and behavior in both the pre-test and post-test did not follow a normal distribution. Consequently, the Wilcoxon test was employed for the statistical difference analysis.

**Table 2.** Kolmogorov Smirnov test results regarding pre- and post-test knowledge and behavior

| Parameter | Statistic | df | p-Value |
|---|---|---|---|
| **Knowledge before comic education** | 0.235 | 100 | 0.0001 |
| **Knowledge after comic education** | 0.271 | 100 | 0.0001 |
| **Behavior before comic education** | 0.151 | 100 | 0.0001 |
| **Behavior after comic education** | 0.192 | 100 | 0.0001 |

*Significant at >0.05

Table 3 reveals notable differences in mean values of knowledge and behavior before the introduction of comic media and after its implementation. The average knowledge score in the pre-test was 6.23, which then rose to 13.80 in the post-test, reflecting an increase in the knowledge score by 7.57. Similarly, the average behavior score during the pre-test stood at 4.97 but increased to 8.20 in the post-test, signifying an improvement in the score by 3.23.

**Table 3.** Mean pre- and post-test knowledge and behavior scores

| Parameter | Stage | Mean±SD | Min-Max | p-Value |
|---|---|---|---|---|
| **Knowledge** | Pre-test | 6.23±1.07 | 4-8 | 7.57 |
| | Post-test | 13.80±1.87 | 11-15 | |
| **Behavior** | Pre-test | 4.97±1.39 | 2-8 | 3.23 |
| | Post-test | 8.20±1.02 | 6-10 | |

An analysis employing the Wilcoxon test was performed on pre- and post-test respondents and a p-value of 0.0001 was obtained, which was less than 0.05. Therefore, there was a significant difference in knowledge and behavior between the pre-training and post-training stages using digital comics.

## Discussion

In the pre-test knowledge questionnaire, only a small percentage (15%) of respondents, knew about the signs of physiological changes during adolescent puberty. Similarly, 14% were aware of the abbreviation HIV, and a mere 16% knew about the HIV. In the post-test, a significant improvement was observed, with 99% of respondents being aware of healthy psychological changes in teenagers during puberty. This was accompanied by an understanding of HIV and AIDS, and the signs of physiological changes during puberty in teenagers, with 94% indicating awareness of key concepts, like adolescent reproductive health, puberty, and sexuality. However, some respondents still struggled with certain aspects, such as identifying specific signs of physiological changes during adolescence, including enlarged chest, wet dreams, and menstruation. Conversely, misconceptions persisted among

respondents, including notions, like easily falling in love, heightened attraction to the opposite sex, daydreaming, and fascination with the opposite sex.

According to Van den Akker [24], signs of physiological changes in adolescent boys encompass a broad range, including the widening of the chest, growth of fine hair on the face, hands, and feet, the onset of sperm production, enlargement of the penis and testicles, experiencing wet dreams, erections, and ejaculation, voice changes, and muscle growth. On the other hand, the signs of physiological changes in teenage girls involve the development of breasts, beginning from buds and maturing to full size. Additionally, pubic hair begins to grow, initially as fine hair that gradually becomes thicker and curlier. Increased sweating can lead to more acne, including blackheads and whiteheads. Vaginal discharge also begins during this stage. Height increases, particularly following the first menstruation, with an annual growth rate of five to 7.5cm until adulthood. There is also an increase in weight due to changes in body shape, marked by the appearance of fat in areas, like the upper arms, thighs, back, hips, and waist [25].

These findings are consistent with several previous studies. For example, Ansari *et al.* [10] showed that comic media influences knowledge about balanced nutrition among elementary school students.

During the pre-test, respondents exhibited poor behavior, with nearly half of them lacking awareness about the importance of specific nutrients for reproductive health. Most respondents also failed to grasp the consequences of smoking and drug use. Following the post-test, significant improvements in behavior were observed, with 91% of respondents demonstrating correct behavior. This included an understanding of measures teenagers should adopt to prevent the transmission of HIV/AIDS, such as abstaining from sexual relations and refraining from drug use. Moreover, they showed increased awareness of the importance of caution when using non-sterile medical equipment.

After the post-test, many respondents exhibited positive behavior related to channeling their sexual urges in a constructive manner, notably by engaging in school-based organizational activities aimed at enhancing the knowledge of the teenage generation. Additionally, most respondents correctly identified the means, by which HIV/AIDS can be contracted, which includes sexual intercourse, needle use, blood transfusions, and transmission from mother to fetus.

These findings are in line with those of Ansari *et al.* [10], who concluded that comic media effectively enhances individuals' knowledge. Students perceive comics as valuable learning tools due to their straightforward use of everyday language, which makes the content highly accessible and comprehensible. Comics convey messages concisely and clearly, catering to the understanding of female students in particular [20, 26]. Furthermore, the research employed engaging writing styles and vibrant comic imagery, motivating female students to read and engage with the material. Female students also expressed a strong affinity for the comics' messages, which were closely related to their daily experiences, immersing them in the narratives and deepening their understanding of the issues they face. This active learning through reading fosters improved comprehension of the material, contributing to enhanced academic performance [5, 6].

Based on our results, as indicated by the responses to the questionnaires, there was a noticeable difference in the average scores between the pre-test and post-test stages. The average knowledge score improved after the introduction of comic media, signifying a positive impact on respondents' knowledge levels. This suggests that the use of comic media had a significant influence on knowledge enhancement.

Research conducted by Handayani [27] supports this notion, asserting that comic media effectively boosts individuals' knowledge. Students find comics conducive to learning due to their utilization of everyday language, which makes the content highly accessible and comprehensible. The messages conveyed are concise and lucid, making it easier for female students, in particular, to comprehend the comic content.

Utilizing comics for adolescent reproductive health education proves to be an effective alternative for disseminating information on this subject. Numerous community service initiatives employ comics as a medium for educating adolescents about reproductive health. For instance, comics are used to evaluate the effectiveness of reproductive health education programs on adolescent behavior. Furthermore, comics can play a vital role in enhancing teenagers' awareness of the significance of maintaining reproductive health to prevent STIs [28, 29].

Considering these advantages, comic media emerges as an exceptionally effective tool for educating teenagers. Adolescent reproductive health comics offer a compelling alternative for delivering information about this topic, ultimately enhancing adolescents' understanding of reproductive health [30, 31]. Consequently, schools should embrace more captivating and innovative media for educating teenagers about healthy reproduction. The research was conducted solely at SMAN 01 Muaro Jambi, posing a limitation as it hinders the generalizability of the findings to all high school students in Jambi City.

## Conclusion

Health education delivered through digital comic media has a substantial impact on students' knowledge and behavior, thereby contributing to the enhancement of healthy reproductive practices among teenagers at SMAN 01 Muaro Jambi. Statistically, a notable disparity exists in both

knowledge and behavior when comparing the levels before and after the introduction of digital comics.

**Acknowledgments:** We extend our sincere gratitude to the Chairperson of Jambi Health Polytechnic, the Chairperson of Palembang Health Polytechnic, and the Chairperson of Mataram Health Polytechnic for their invaluable support in providing the necessary research facilities. Additionally, we would like to express our heartfelt appreciation to the Head of SMAN 01 Muaro Jambi for invaluable assistance in supplying the required data.

**Ethical Permissions:** This study obtained ethical feasibility under the Health Research Ethics Commission of the Ministry of Health, Jambi (LB.02.06/2/819/2023).

**Conflicts of Interests:** The authors declared that there is no Conflict of interest

**Authors' Contribution:** Winda Triana (First Author), Introduction Writer/Main Researcher/Statistical Analyst (50%); Ervon Veriza (Second Author), Assistant Researcher/Discussion Writer (15%); Almuhaimin (Third Author), Methodologist/Discussion Writer (15%); Yuli Hartati (Fourth Author), Statistical Analyst (10%); Rusmini. (Fifth Author), Introduction Writer/Discussion Writer (10%)

**Funding/Support:** This research did not receive financial support from any party.

## References

1- Perempuan KP. Adolescent Reproductive Health. Jakarta: KPPA. 2018. [Indonesian]

2- Wahyuni S, Fahmi I. Determinants of Pre-Marital Sexual Behavior of Male Adolescents in Indonesia, IDHS Results. Euclid. 2019;6(2):177-88. [Indonesian]

3- Permatasari D, Reproductive Health Education for Adolescents. J Empathy Pengabdian Kepada Masyarakat. 2021;8-12. [Indonesian]

4- Kemenkes RI. Reproductive Health Education for Adolescents [Internet]. Reproductive Health Education for Adolescents; 2018- [cited 2023 Jul 20]. Available from: https://kesmas.kemkes.go.id/assets/upload/dir_519d41d8cd98f00/files/Hasil-riskesdas-2018_1274.pdf.%20Last%20accessed:%2020%20June%202022. [Indonesian]

5- Moyo E, Moyo P, Murewanhema G, Mhango M, Chitungo I, Dzinamarira T. Key populations and Sub-Saharan Africa's HIV response. Front Public Health. 2023;11:1079990.

6- Masnarivan Y, Khairiyah F, Maharani D, Yelna HF, Zachrany NQ. Analysis of condom use behavior, number of partners, and injecting drugs with the incidence of hiv/aids in indonesia: A systematic review and meta analysis. Jambi Med J. 2023;11(3):323-33. [Indonesian]

7- Elgalib A, Shah S, Al-Habsi Z, Al-Fouri M, Lau R, Al-Rawahi B, et al. Recent Increase in HIV cases in Oman. Sultan Qaboos Univ Med J. 2023;23(3):285-7.

8- Dinkes Kota Jambi. Jambi City Health Profile [Internet]. Jambi: Jamb Provincial Governmenti; 2021- [cited 2022 Jul 19]. Available from: https://dinkes.jambiprov.go.id/file/informasi_publik/MTY3MTc2MzAxNQ_Wkt1671763015_XtLnBkZg.pdf. [Indonesian]

9- Sari R. In Christianity and Islam: John Gill's Hermeneutical Perspective and Tafsir Al-Suyûtî. Jakarta: FU; 2020. [Indonesian]

10- Ansari R, Suwarni L, Selviana S, Mawardi M, Rochmawati R. Comic Media as an Alternative Media for Promotion of Adolescent Sexuality Health. 2020;19(01):10-4. [Indonesian]

11- Sasono B, Adawiyah WR, Basit A. Teen sex education media: A case study vocational high school 3 purbalingga in Indonesia. Islamic Stud J. 2021;1(1):34-53.

12- Pinkleton BE, Austin EW, Cohen M, Chen YC Yvonnes, Fitzgerald E. Effects of a peer-led media literacy curriculum on adolescents' knowledge and attitudes toward sexual behavior and media portrayals of sex. Health commun. 2008;23(5):462-72.

13- Orozco-Olvera V, Shen F, Cluver L. The effectiveness of using entertainment education narratives to promote safer sexual behaviors of youth: A meta-analysis, 1985-2017. PLoS One. 2019;14(2):e0209969.

14- Wanyonyi HS. Youth sexual behaviour and sex education. Int J Educ Res. 2014;2(3):1-14.

15- Suparman IW, Eliyanti M, Hermawati E. The influence of presenting material in the form of comic media on reading interest and learning outcomes. Pedagogi: Jurnal Penelitian Pendidikan. 2020;7(1). [Indonesian]

16- Strasburger VC, Jordan AB, Donnerstein E. Health effects of media on children and adolescents. Pediatrics. 2010;125(4):756-67.

17- Chernick LS, Konja A, Gonzalez A, Stockwell MS, Ehrhardt A, Bakken S, et al. Designing illustrative social media stories to promote adolescent peer support and healthy sexual behaviors. Digit Health. 2022;8:20552076221104660.

18- Gufron Z. Use of Comic Media in Qiro'Ah Learning. Yogyakarta: UIN Sunan Kalijaga. Yogyakarta: UIN Sunan Kalijaga. 2008. [Indonesian]

19- Collier KM, Coyne SM, Rasmussen EE, Hawkins AJ, Padilla-Walker LM, Erickson SE, et al. Does parental mediation of media influence child outcomes? A meta-analysis on media time, aggression, substance use, and sexual behavior. Dev Psychol. 2016;52(5):798.

20- Harris AL. Media and technology in adolescent sexual education and safety. J Obstet Gynecol Neonatal Nurs. 2011;40(2):235-42.

21- Lwanga SK, Lemeshow S, Organization WH. Sample size determination in health studies: A practical manual. Geneva: World Health Organization; 1991.

22- Burstein VR, Trajano RP, Kravitz RL, Bell RA, Vora D, May LS. Communication interventions to promote the public's awareness of antibiotics: a systematic review. BMC Public Health. 2019;19:1-1.

23- Mahmudah L. Improving the hard skills and soft skills of MADRASAH teachers for dealing ASEAN economic community (AEC). Addin. 2016;10(2):341-64.

24- Van den Akker OBA. Reproductive health psychology. New Jersey: John Wiley & Sons; 2012.

25- Situmorang A. Adolescent reproductive health in Indonesia. Jakarta: STARH Program; 2003.

26- Hust SJT, Brown JD, L'Engle KL. Boys will be boys and girls better be prepared: An analysis of the rare sexual health messages in young adolescents' media. Mass Commun Soc. 2008;11(1):3-23.

27- Handayani S. Use of Comic Media in Qiro'Ah Learning. Yogyakarta: UIN Sunan Kalijaga. Gaster. 2010;7(1):482-90. [Indonesian]

28- Wight D, Abraham C, Scott S. Towards a psycho-social theoretical framework for sexual health promotion. Health Educ Res. 1998;13(3):317-30.

29- Hull TH, Hasmi E, Widyantoro N. "Peer" educator initiatives for adolescent reproductive health projects in Indonesia. Reprod Health Matters. 2004;12(23):29-39.

30- Hutchinson P, Mirzoyants A, Leyton A. Empowering youth for social change through the Shujaaz multimedia platform in Kenya. Int J Adolesc Youth. 2019;24(1):102-16.

31- Rina N, Suminar J, Damayani N, Hafiar H. Character education based on digital comic media. IntJ Interactive Mob Technol. 2020;14(03):107-27.