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UTILIZATION OF DIGITAL-BASED EDUCATIONAL MEDIA TO INCREASE ADOLESCENT REPRODUCTIVE HEALTH KNOWLEDGE: A LITERATURE REVIEW

Pemanfaatan Media Edukasi Berbasis Digital untuk Meningkatkan Pengetahuan Kesehatan Reproduksi Remaja: Tinjauan Pustaka

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ABSTRAK

Seks pra nikah, aborsi, serta HIV (human immunodeficiency virus) dan AIDS (acquired immunodeficiency syndrome) pada remaja disebabkan oleh kurangnya kesadaran akan masalah kesehatan reproduksi dan stigma seputar seksualitas. Terbatasnya akses terhadap informasi yang sesuai dengan kebutuhan remaja merupakan salah satu faktor penyebabnya. Informasi tentang kondisi medis regeneratif sangat penting untuk membantu upaya mengembangkan status kesejahteraan konseptual. Edukasi media digital merupakan strategi baru yang mudah diakses, dapat diandalkan, sesuai, dan ramah remaja. Tujuan dari tinjauan pustaka ini adalah untuk menganalisis implementasi dan pemanfaatan media edukasi berbasis digital untuk meningkatkan pengetahuan kesehatan reproduksi remaja Struktur penelitian ini merupakan analisis terinci yang menggunakan diagram alir PRISMA. Peneliti menerapkan metode PICO dan mencari artikel dalam bahasa Inggris yang dipublikasikan antara tahun 2019-2024 dengan mengumpulkan artikel melalui pencarian di beberapa database yaitu Google Cendekia, Springer, PubMed, Sage dan Science Direct, serta menghasilkan 15 jurnal yang relevan. Dari penelusuran literature media edukasi yang digunakan baik melalui mHealth , video, jejaring sosial, ponsel, chatbot AI dan aplikasi. Hasilnya menunjukkan bahwa penggunaan berbagai jenis media edukasi digital terbukti bermanfaat untuk mengajarkan tentang promosi kesehatan, khususnya dalam meningkatkan pengetahuan, perspektif, dan mendukung remaja untuk berperilaku sehat.

Kata kunci*: media digital, pendidikan reproduksi, pengetahuan kesehatan, remaja*

ABSTRACT

Premarital sex and abortion, as well as HIV (human immunodeficiency virus) and AIDS (acquired immunodeficiency syndrome), have been brought on by adolescents' lack of awareness of reproductive health issues and the stigma surrounding sexuality. Limited access to appropriate information that meets adolescent' needs is one of the contributing factors. Information about regenerative medical conditions is vital to help endeavors to further develop conceptive wellbeing status. Digital media education is a novel strategy that is accessible, dependable, appropriate, and adolescent-friendly. The purpose of this literature review is to examine how digital-based educational media are implemented and utilized to increase awareness of adolescent reproductive health. The design of this examination is a point by point investigation utilizing the PRISMA stream graph. The researchers used the PICO method to look for English-language articles published between 2019 and 2024. They did this by searching for articles in a number of databases, including Google Scholar, Springer, PubMed, Sage, and Science Direct. They found 15 relevant journals. According to a literature review, mHealth, video, social networks, cellphones, AI chatbots, and applications are the educational media utilized. The findings

indicate that using a variety of digital educational media to teach about health promotion has proven to be effective, particularly in expanding adolescent knowledge and perspectives and encouraging healthy behavior among adolescents.

Keywords: adolescent, digital media, health knowledge, reproductive education

INTRODUCTION

Adolescence is the period of life between childhood and adulthood [1]. People who are between the ages of 10 and 19 are considered adolescents [2]. The transitional stage between childhood and maturity is known as adolescence [1]. The most critical period for human development, namely, is between the ages of 10 and 14; nonetheless, this is also one of the life's most poorly understood stages. Gender-based violence (GBV), an increase in unintended and teenage pregnancies, early marriage, and unprotected sex because of personal struggles are some of the issues that youth worldwide face when it comes to sexual and reproductive rights and health (SRH). HIV transmission, STIs, and the availability of safe contraceptive and abortion services[3].

About two million adolescents are infected with HIV, and it is estimated that nearly 10% of girls in low- and middle-income countries (LMICs) become mothers before the age of 16, with the highest rate being 1.6 million in Sub-Saharan Africa (SSA). The majority of sexually active adolescents are unaware of resources for acquiring contraception, contracting STIs, or gaining access to social-psychological support services. The integration of digital-based educational media has increased the cost-efficiency of service delivery, improved disease tracking capabilities and enabled the timely acquisition of public health information [4].

The development of digital technologies such as the use of the internet, text messaging through mobile phones, various types of applications and social media is a means to disseminate and obtain sexual and reproductive health information. communication platform, mHealth, which is defined as "medical and public health practices supported by mobile phones, tablets, and thermal devices. This study aimed to analyse the use of digital-based educational media in improving SRH knowledge among adolescents to promote SRH health globally [5],[6]

METHODS

This study is a literature review, the search was conducted through databases from Google Scholar, PubMed SAGE Journals, Scopus, and Science Direct. The search process uses the keywords "adolescent" AND "digital media" OR "reproductive education" AND "health knowledge". The inclusion criteria used were articles published from 2019 to 2024, articles related to the use of digital-based educational media with the target of adolescents, and aimed at increasing knowledge and understanding of adolescent reproductive health and articles using the English language. 103 articles were netted from the search results, with the final selection results there were 15 articles that met the inclusion and exclusion criteria, as in table1 below:

Table 1. List of Publication Years

No	Publication Year Category	Amount	%
1	2019	1	6,67
2	2020	3	20.00
3	2021	2	13,33
4	2022	5	33.33
5	2023	0	0
6	2024	4	26,67
	Total	15	100

Based on table 1, it shows that 15 articles were chosen to analyze articles published in the 2019-2024 period.

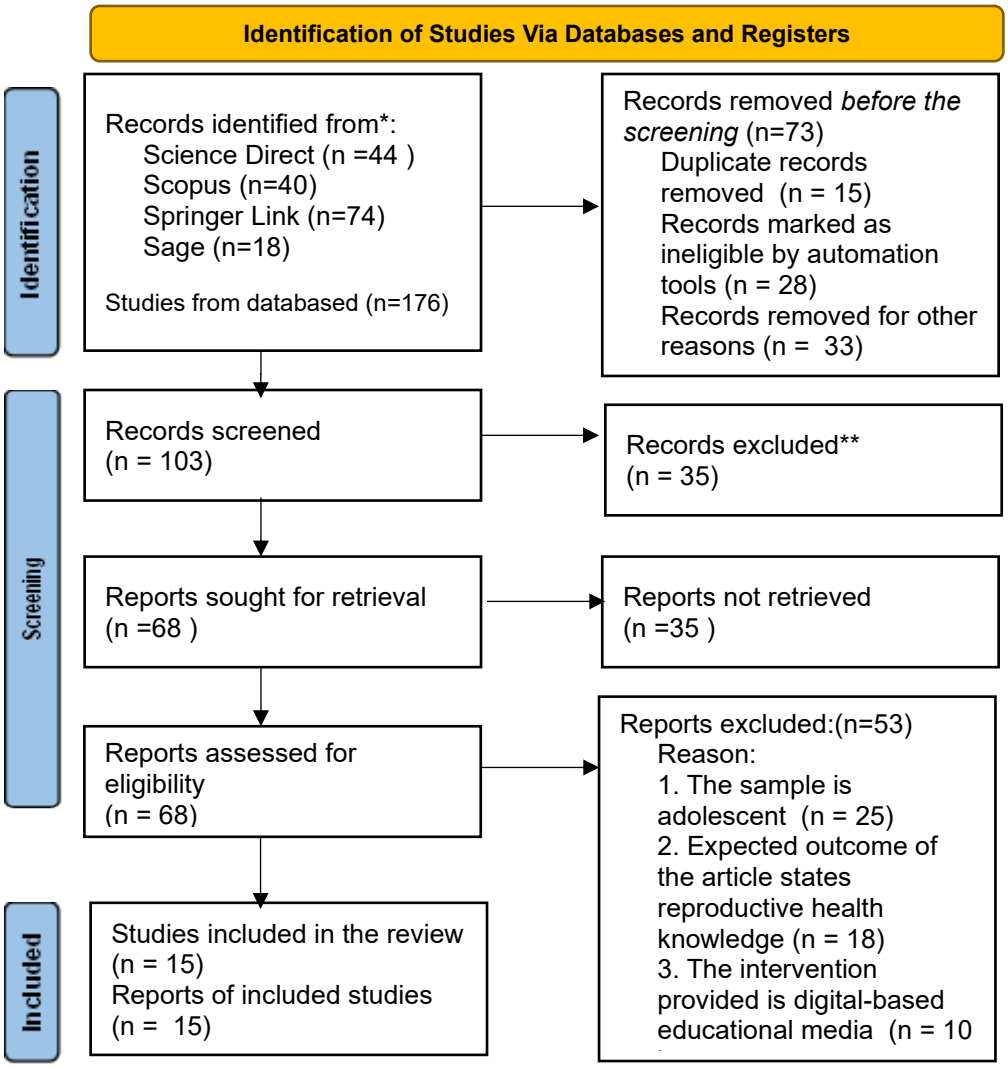

Figure. 1 PRISMA Flowchat

Studies Selection

Through initial searching, this study initially found 176 articles from various basic data. Of the full articles found, only 68 were considered reasonable to consider in perception. 68 articles were later clarified once again and 53 articles were banned because of contrast in purpose, contrast in population, and contrast in mediation. The excess of 15 (fifteen) articles is remembered for the information extraction process. The article selection flowchart in figure 1 provides a comprehensive overview of the search strategy.

RESULT

The articles analyzed are articles with research designs, *pre-experimental research, pre* and *study experimental research, prospective non-experimental* , *Randomized Controlled Trials* (RCT), quantitative, *quasi experimental* ," *qualitative research.* Based on a review of 15 journals, the results of writing articles relating to the use of digital-based educational media to increase knowledge of adolescent reproductive health are as follows.

Table 2. Research Design

Research design	Number of Journals	%
Quantitative Study	2	13.33
Instrumental case study	1	6.67
Randomized Controlled Trials (RCT)	6	40.00
Quasi-experimental	4	26,66
Qualitative study	2	13.33
Total	15	100%

Based on table 2, it shows that the 15 journals analyzed on average used *Randomized Controlled Trials* (RCT) and *quasi-experimental study research designs.*

Various research designs that contribute to the utilization of digital-based educational media used to improve knowledge and adolescent reproductive health in various nations were identified in the literature search. Six articles used the Randomized Controlled Trials (RCT) design, one case study report, two quantitative studies, two qualitative studies, and four articles used quasi-experimental studies, according to the search results. This analysis reveals that the RCT design is utilized the most frequently. The complete details of this can be found in Table 3 below:

Table 3. Article Characteristics

No	Author and Title	Purpose	Methods	Result
1	Jose.E, 2022. Peru The ARMADILLO text message intervention to improve the sexual and reproductive health knowledge of adolescents in Peru: Results of a randomized controlled trial [7] Journals.plos.	To ascertain whether adolescents between the ages of 13 and 17 who had access to sexual and reproductive health information via SMS were better able to reject myths and misconceptions around contraception compared to adolescents who received coerced SMS or received standardized services (" without intervention").	**Desain:** Randomized Controlled Trial **Technique:** 712 participants where randomized trial was an unblinded, three-arm, parallel-group, individual RCT with a 1:1:1 allocation. **Samples:** 712 participants adolescents (males or females) ages 13–17; literate; have their own mobile phone	**Result:** A total of 712 individuals were assigned at random to one of the three arms: 659 people who finished the end line evaluation were added to the main analysis. When compared to participants in the control arm, Arm 2 participants believed fewer myths at the end (estimated subject-specific mean difference of -3.69% [-6.17%, -1.21%], p = 0.004). Neither participants in Arm 1 compared to Arm 2 nor those in Arm 1 compared to the control Arm showed any discernible differences. All arms showed a further decline in myths believed between end line and follow-up (knowledge retention); arms did not differ from one another, though. **Conclusion:** Participants' understanding of contraception is significantly (albeit not significantly) impacted by the content of the ARMADILLO SMS. Adolescent SRH digital health initiatives on their own might only have a little impact. The optimum usage of digital is most

				likely as an additional channel to broaden the audience for currently available validated SRH information and service offerings.
2	Hua Wang, 2022. India An Artificial Intelligence Chatbot for Young People's Sexual and Reproductive Health in India (snehai): Instrumental Case Study [8] Journal of Medical Internet Research JMIR Publications	Examining snehai and offering Scientific guidance on AI chatbots can be used to educate teenagers and young adults in India	**Design:** Instrumental Case Study **Technique:** Purposive Sampling An instrumental case study That Explores snehai from the perspectives of technology design, program implementation, and user engagement **Samples**: 84 Teenagers and 19 young adults.	**Results:** Results: With 8.2 million messages exchanged over a five-month period, Snehai successfully attracted users, particularly young men. Almost half of the messages sent by the user were private texts with questions and concerns about sex and reproductive health. **Conclusion**: Snehai is an innovative, engaging, and educational program that gives vulnerable and hard-to-reach groups in society the ability to discuss and learn about important topics.
3	Bickmore T, 2020.America Promotion of Preconception Care Among Adolescents and Young Adults Africa- America by Conversational Agent[9] Journals Adolesc Health	Evaluate the acceptability, utility, and application of an automated intervention for preconception care screening. risks and deal with them over a time of one year through an online energized virtual wellbeing counsel	**Design:** Randomized Controlled Trial **Technique:** randomization sampling **sample:** 528 women, aged 18-25 and 26-34 years	**Results:** The adolescents and participants are young people between the ages of 18 and 25. Upon enrollment and randomization to the intervention, 20.25 percent of participants access the system no time, 29.11 percent, 1-3 times, and 50.63 percent, more than three times per year. Toward the finish of year, practically all (96.4%) said they had followed the suggestions given by specialists or expect to do as such. **Conclusion:** Web-based chatbots make it possible to vertically provide anti-prejudice advice for teens and young adults**.**
4	Nkholongo.NE.2024. South Africa Usability and Acceptability of a Conversational Agent Health Education App (Nthabi) for Young Women in Lesotho: Quantitative Study [10] Journals Adolesc Health	To ascertain whether or not the a conversational agent's usability framework, the Nthabi wellbeing advancement application, which was socially adjusted for use in Lesotho.	**Design:** Descriptive quantitative study, **Technique:** using a 22-item Likert scale survey to assess the perceptions of the usability and acceptability **Samples**: of 172 young women aged 18-28 years in rural districts of Lesotho, who used the system on either	**Resu**lt: The respondents held the with 134, the app was useful. Participants (97.1%) firmly agreeing with or concurring that the application was "viable in making a difference them simply decide" and "can rapidly enhance" health awareness and counselling." Additionally, 136 (98.5%) members firmly agreed upon or acknowledged that the app "simple to use," 130 %) reported by participants that Nthabi would be able "without any problem rehash words that were

			smartphones or tablets for up to 6 weeks.	not easily understood," and 128 participants (92.7%). disclosed that the application that "can rapidly load the data onto the screen In Lesotho **Conclusion**: There is a significant absence of health issues human capital, the results encourage more studies on agent of conversation systems as a possibility substitute for face-to-face traditional health information services.
5	Skouteris H, 2021 Australia The Use of Social Media for Preconception Information and Pregnancy Planning among Young Women[11] Journal of Clinical Medicine	To examine the proportion, type, and frequency of social media use to seek information or advice on general health, preconception, and pregnancy among young women	**Design:** Quantitative Study, survey design **Technique:** Probability Sampling, Stratified Random Sampling **Samples**:91 women aged 18-25 years living in Australia.	**Results**: The study revealed that 91 female Australians aged 18 to 25 finished an on the web survey regarding their examples and inclinations of online entertainment use for this data, or forty percent Women used social media for health-related purposes. data (most frequently daily), 32% for prenatal wellness guidance (most often) every week), and 20% for information pertaining to pregnancy (most commonly) week by week), with Facebook the one that is used the most platform. **Conclusions:** It's essential that social platforms for media are utilized for dissemination presupposition and Planning a pregnancy assistance, advice, and instruction to supply better promotion of health and treatment to prevent young females
6	Meghari A, 2019. Palestine Effects Of Using Social Networks On Adolescents: Applied Study On a Sample Of High School Students An-Najah University [12] Journal for Research – B (Humanities)	To identify the negative social, cultural, psychological and health impacts of secondary school students due to the use of social networking sites.	**Design:** Descriptive research **Technique:** Purposive Sampling **Samples**: 300 male and female students in Gaza City	**Results:** The findings of the study also imply that teenagers' social, mental social, and wellbeing elements are a little harmed by this purpose Although there is a distinction that advantages women's health in general there are no effects; significant statistically variation from the average figures for men and women regarding the effects the effects of SNS in terms of social, social, and psychological factors as well as effects on health. **Conclusion:** the most significant being that there was a decrease in the use of men and women on social media platforms.

7	Hémono.R. 2024. Afrika Sub-Sahara CyberRwanda's Pathway to Impact: Results From a Cluster-Randomized Trial of Adolescent Family Planning Knowledge, Beliefs, Self-Efficacy, and Behavior Afrika Sub-Sahara [13] Journal Adolesc Health	A CyberRwanda digital wellness intended intervention to acquire more knowledge of family development and conceptive wellbeing access and FP/RH to youth-accommodating Rwandan services Sub-Saharan Africa	**Design:** Randomized Control Trials (RCTs) **Technique:** randomized **Samples**: Sixty schools in eight districts were randomized 1:1:1 to one of two CyberRwanda Implementation models—self-service (tablet-only) or facilitated (tablet, activity booklet, peer facilitators)—or to control. Students aged 12–19 years were randomly selected to participate.	**Result:** That after four to seven months contact with the intervention CyberRwanda is favorable influence basic information, behavioral and attitudinal results for teenagers Rwanda and provide new understanding of the advantages of diverse intervention models for implementation **Conclusion:** CyberRwanda expanded. FP/RH expertise, Supportive beliefs and attitudes, self- efficiency and conduct at twelve months The two year endline investigation will determine whether CyberRwanda's advantages changes to the result of intermediate outcomes primary results, including the use of contraceptives and pregnancy.
8	Paul M, 2022. Eastern Africa Leveraging Mobile Phone-Based Technologies To Provide On-Demand Adolescent Sexual Reproductive Health Information In A Resource-Limited Setting: Kibra, Nairobi County [4] *Universität Oberta de Catalunya*	To look into the current sources for kids data and Their restrictions. It then investigates the technology's role particularly mobile phones can be used in between Young People to fulfill their needs for information	**Design:** Qualitative Studies and RCTs **Technique**: purposive sampling **Samples**: The app was used by 109 teens (54.9%). Using a human-centered design (HCD) approach to the design, development, and testing of field mobile applications, qualitative research aims to investigate adolescents' current information sources and their limitations. A randomized controlled trial (RCT) was used to investigate the application's capacity to provide information in order to evaluate the potential impact of a mobile application on malaria outcomes	**Results:** that SRH information must be provided anonymously, securely, and confidentially. Young people need precise and modern SRH data. An accessible, user-friendly, and dependable delivery platform can be provided by mobile. **Conclusion:** Data gave in an unknown manner could further develop mindfulness and engage teenagers to make informed decisions, resulting in improved outcomes for their reproductive health. Participants say that, cell phone applications can possibly give SRH data to young people.

			among adolescents. SRH data on demand and enhanced SRH outcomes	
9	Gomez A, 2022. Central America Harnessing the Power of Technology to Improve Sexual and Reproductive Youth Health in Nicaragua: A Randomized Field Study [14] *Sage Journals*	Assessing a short-term e-learning intervention to improve the knowledge, skills, motivation, and behaviour of Nicaraguan adolescents aged 14-17 years related to sexual and reproductive health (SRH)	**Design:** A Randomized Field Study **Technique:** purposive sampling **Samples:** among 14–17-year-old Nicaraguan youth.	**Results :** Teenagers who utilized the application finished the intercession all the more every now and again. The mediation essentially expanded SRH information, abilities, and inspiration for young people (98%) and postponed the age at which they had their most memorable sexual experience. **Conclusion:** The outcomes are promising and demonstrate the possible versatility of this kind of mediation.
10	Scarlett Bergam ,2022 South African "I am not shy anymore": A qualitative study of the role of an interactive health intervention on sexual health knowledge, attitudes, and behaviors of South African adolescents with perinatal HIV [15] *National Library of Medicine National Center for Biotechnology Information PubMed*	Evaluating how mHealth interventions influence sexual health knowledge and behavior in APHIV.	**Design:** Randomized Controlled Trial (RCT), **Technique:** purposive sampling **Samples:** **Sample**: 21 adolescent participants with an average age of 16.6 years	**Results:** Of the 21 participants, 13 (61.9%) were female and the mean age was 16.6 years. Most participants reported first learning about SRH as teenagers at school in untargeted and negative ways, seeking clarification through peers and the internet rather than through doctors or caregivers. **Conclusion:** Future broader mHealth interventions could reduce the stigma of SRH by expanding access to sexual education and peer support, complementing existing youth SRH education.

11	Pedrana Alisa, 2020. Indonesia A Quasi-Experimental Text Messaging Trial to Improve Adolescent Sexual and Reproductive Health and Smoking Knowledge In Indonesia [16] *Csiro Publishing Sexual Health Journals*	To evaluate the feasibility and acceptability of a text message intervention to increase adolescents' knowledge about sexual reproductive health (SRH) and smoking-related harms in Indonesia	**Design:** a quasi-experimental **Technique:** enrolled adolescents from the intervention arm of a randomized clinical trial **Samples**: short message service (SMS) trial of 555 youth aged 16–24 years who received text messages twice a week over a 10-week intervention period.	**Results:** 555 eligible adolescents participated in the SMS intervention; 235 (42% of the total) completed the follow-up survey, and 198 (84% of the total) were matched with the baseline survey. The majority of participants were female, with a median age of 19 years. Between the baseline and follow-up surveys, the mean knowledge scores significantly increased. Most of members detailed that the SMS mediation expanded their insight (95%) and was valuable as an update (95%) **Conclusion:** In low-to middle-income settings, the SMS intervention was feasible, acceptable, and improved youth smoking and SRH knowledge. It is necessary to increase the scale of SMS interventions aimed at young people, with the potential to investigate additional topics related to nutrition, physical activity, and healthy lifestyles.
12	Tanima Ahmed,2020. Bangladesh Effect of mHealth tool on knowledge regarding reproductive health of school going adolescent girls: a before-after quasi-experimental study [17] British Medical Journal	This study was to find out how schoolgirls use the mHealth tool and how much knowledge they have about reproductive health (RH) among adolescent girls.	**Design:** Before-after type of quasi-experimental study **Technique:**purposive sampling **Samples:** 400 adolescent girls aged 14–19 years were selected based on defined criteria	**Result:** With a large effect size (cohen's d=3.6), the RH knowledge score after the intervention was significantly higher than the preintervention knowledge score (mean 44.71%9.13%) (paired t=69.721, p0.001). **Conclusion:** The outcome demonstrated that the SMS apparatus of the mHealth approach is a simple and viable method for further developing RH information for juvenile young ladies. The girls were enthusiastic about the SMS intervention.
13	Nuwamanya E,2020 Uganda Effectiveness of a mobile phone application to increase access to sexual and reproductive health information,	This study assessed the effectiveness of using a mobile phone application (APP) to increase access to SRH information, goods, and services among	**Design:** Randomized Controlled Trial (RCT) **Technique:**double-blinded randomized controlled trial **Samples:** sample size of 958 participants student	**Result**: After adjusting for demographic characteristics, there was a significant 0.98 unit increase in knowledge score (adjusted coefficient = 0.98, P 0.001), a significant 1.6-fold increase in odds of contraception use (adjusted coefficient = 1.6, P = 0.04), a significant 3.5-fold increase in HIV VCT (adjusted

	goods, and services among university students in Uganda: a randomized controlled trial Contraception and Reproductive Medicine BioMed Central's [18] https://contraceptionmedicine.biomedcentral.com/articles/10.1186/s40834-020-00134-5	university students in Uganda.	at university aged 18-30 years	coefficient = 3.5, P 0.001), and a significant 2-fold increase in odds of STI testing and treatment **Conclusion:** Among Ugandan University students who were sexually active, a mobile phone application increased their knowledge of sexual and reproductive health information (knowledge score), access to goods (contraceptives), and services (HIV voluntary testing and counseling, and diagnosis and management of sexually transmitted infections).
14	Kathleen Tebb, 2020. America Using an iPad App in School Health Centers to Support Latina Teens Making Choices about Birth Control—The Health-E You/Salud itu Intervention [Internet] [19] *National Library of Medicine National Center for Biotechnology Information PubMed*	To find out how well Health-E You (1) helps Latina adolescents choose and use effective contraception to prevent unintended pregnancy (as measured by knowledge, attitudes, and self-efficacy).	**Design:** Randomized Controlled Trial (RCT) **Technique:** Cluster-randomized controlled trial **Samples**: included 1,360 Latino adolescents, 693 of whom were in the intervention group and 667 of whom were in the control group. The average age of the participants was 16.4 years. A cluster randomized controlled trial was used in this study, which followed 1,360 Latina adolescents for six months in 18 school-based health centers (sbhcs).	**Results:** app users (intervention group) showed a significant increase in knowledge (P < 0.001). The increase in self-efficacy in the intervention group from baseline to 6 months was significantly greater than that in the control group **Conclusion:** Latina adolescents attending SBHCs increased their use of nonbarrier contraception, self-efficacy, and knowledge through the health-E You program. Adolescents and providers expressed high app satisfaction and stated that Health-E You enhanced visit efficiency and quality.
15	Rahman JMD, 2024. Bangladesh The Impact of Health Education on Changing Menstrual Hygiene Management Knowledge and Practices Among School-going Adolescent Girls	To analyze the impact of mHealth education on knowledge and practices of menstrual hygiene management among school-going adolescent girls in rural Bangladesh.	**Design:** A Quasi-experimental Study **Technique:** A random sampling technique **Samples**: In a quasi-experimental study that ran from the beginning of June to the end of December 2023 at	**Results**: mHealth education can be considered as a significant tool to improve knowledge and practices related to menstrual hygiene management in rural areas of Bangladesh. **Conclusion:** The exploration discoveries might show the viability of mHealth instruction and may prompt proposals for executing such

in Rural Bangladesh: A Quasi-Experimental Study Protocol [20] National Library of Medicine National Center for Biotechnology Information PubMed	a high school in Chandpur, Bangladesh, 172 young people took part. Participant data will be collected through face-to-face interviews with the help of a structured questionnaire that asks about knowledge of menstrual hygiene management and socioeconomic status.	wellbeing training at the public level through calls and SMS. mHealth might act as a viable apparatus to further develop information and advance great feminine cleanliness the executives rehearse among school-going young adult young ladies.

DISCUSSION

The fifteen articles reviewed show that the use of various types of digital educational media has proven to be useful for teaching about health promotion, and can significantly increase knowledge, perspectives, and support teenagers to behave healthily. This study's findings are in line with those of a 2019 study by Wadham.E., which looked at 25 articles about evaluating the efficacy of sexy health interventions delivered through new digital media to younger generations. This research concludes that the broad potential of digital media increases the promotion and delivery of health services towards better sexual health. There is significant scope for interacting in real time with the younger generation.[21]

The conditions of complete physical, mental, and social well-being in all areas related to the reproductive and sexual health refers to the reproductive system. This suggests that individuals can have a wonderful and safe sexual coexistence, the capacity to recreate and the opportunity to choose whether, when and how frequently they ought to do. Adolescents have a little information about contraception, there are lots of options accessible, but getting services can be difficult because of stigma and discomfort around sexual health, particularly. To protect sexual and reproductive health, everyone needs to have access to accurate and diverse information about safe, effective, economical, and socially acceptable contraceptive options to protect their sexual and reproductive health [22],[23]. Increased knowledge can be obtained through health information from various sources, including the media, internet, health workers, peers, family, and other sources, especially in the current era, it is increasingly easy to use technology to access health information through internet or social media[24],[25],[26]

Using digital media design to distribute counter messages on social media is one of the recommended methods.[27] Teens in the US possess or use cellphones 95% of the time, and 89% of them are online frequently or constantly. Adolescents also regularly utilize digital media. According to research, 82% of teenagers claim that visual social media platforms like YouTube, Instagram, and Snapchat serve as their primary source of health-related information, such as the risks associated with e-cigarettes [11]. According to *Skouteris* in 2021, social media platforms need to be utilized to promote disseminate advices, information and education about preconception health and pregnancy planning to provide enhanced services and better health prevention for young women [12], [10]

Implementation of Educational Media in Improving Adolescent Reproductive Health

The implementation of educational media in improving adolescent reproductive health is an important step to address sexuality issues faced by adolescents around the world.[29] Digital and online educational media platforms are in great demand as sources of health information. sources of health information, digital and online educational media platforms are in high demand. Because tweens and teens consume new digital media at significant rates, it presents a promising avenue for delivering interventions related to sexual health. Because it is more efficient and effective, internet-based health education media can be used as a substitute for traditional methods of providing health information[15], [26]

According to research by Wadham E, et al., 2019 that that showed how digital media platforms—such as social networking sites, websites, and text messaging have fundamentally changed interpersonal communication and offered new opportunities for health interventions, numerous digital media interventions have been implemented to promote sexual health among adolescents. Because of the high usage and utilisation of digital media among young people, advances in digital media provide potential new opportunities to deliver health interventions to young people to improve knowledge and understanding of reproductive health and reduce the risk of infectious diseases, such as Sexually Transmitted Infections (STIs) [21].

Adolescents' Acceptance of Digital-Based Educational Media Services

Adolescents' acceptance of digital education media services has several aspects that need to be considered. Many people with low incomes do not have digital devices or the skills needed for distance learning. It is known that adolescents experience difficulties in operating devices and using online learning platforms. Lack of availability in remote areas, rural and remote areas face the constraints of lack of infrastructure and poor internet connectivity. [31]

A randomized field pilot study evaluated the use, satisfaction, and impact of a short-term online learning intervention to improve knowledge, skills, motivation, and behavior on reproductive health (SRH) in young people 14-17 years old [20]. While access to technology and the internet are significant barriers, apps and email channels are effective ways to connect with youth who have access to the internet and mobile devices. Adolescents who used the app were more likely to complete the entire intervention. Adolescents were highly satisfied with the intervention (98%) and significantly improved their SRH knowledge, skills and motivation.[27]

Sexual and reproductive health-related services are being transformed digitally. Acceptance of digital services has been scrutinised in a number of studies. The majority of UK adolescents (96%) and smartphone apps (57%) accept and use websites or apps to obtain SRH information, The majority (70%) chose consultations at clinics as their best initial contact for discussing SRH, followed by telephone consultations (17%), live webchat (10%), and video consultations via FaceTime or Skype (3%). It was seen that although they were open to receiving remote consultations, participants favoured in-person interactions. Results showed that video consultations were moderately accepted and web chat services were well received [17], [10].

Effectiveness of Adolescent Health and Social Sciences Education Media

Although digital media is recognised as a new and important health communication tool, there is little published evidence on the effectiveness of sexual health interventions delivered through digital media. Like health disorder prevention interventions, the use of digital platforms seeks to increase knowledge, improve intention, contraceptive use behaviour, and communicate contraceptive use with partners [16]. Based on reviews, the use of digital media continues to attract great interest due to its wide reach, appeal

to younger generations, interactive features, efficiency in disseminating messages and connectivity between and within peer communities [19].

A review conducted by Wadham et al, 2019 found that digital media interventions are effective in improving sexual health knowledge in adolescents or young adults (aged 13-24 years), especially regarding concerns about HIV and other sexually transmitted diseases [16]. Other research investigated the effectiveness of using mobile phone applications to increase access to sexual and reproductive health information, goods, and services.Digital-based youth reproductive health education and services, such as mobile phones, computers with internet access, including social media platforms, are very popular among youth around the world adapted from evidence-based programmes [20] Adolescents need accurate and up-to-date SRH information.

According to a literature review of 12 studies by Nazeema Isaacs, 2024. 95.4% showed an improvement in knowledge, attitude, or behaviour towards providing reproductive health education to adolescents. Findings suggest that mHealth interventions are effective in improving sexual and reproductive health (SRH) knowledge and attitudes among young people in low-, middle-, and high-income countries [18]. Digital age interventions for adolescent reproductive health range from social media and healthcare apps to gaming models.[27]

Satisfaction Of Using Digital-Based Educational Media By Adolescent

Although the application of technology and the use of internet may present significant barriers, Gomes' pilot study in 2022 evaluated the use, satisfaction, and impact of a short-term e-learning intervention to improve sexual and reproductive health awareness, skills, motivation, and behaviours among adolescents aged 14-17 years. The findings of this study suggest that email and app delivery channels are effective ways to communicate with young people who have these resources [6],[14],[32]. Adolescents who downloaded the app had a higher likelihood of completing the entire intervention. Adolescents' satisfaction with the intervention was 98%, and resulted in significant improvements in SRH knowledge, ability, and encouragement in addition to delaying the age at which they had their first sexual experience [21], [12].

In a study conducted by researchers, healthcare providers and APHIV recommended the use of smartphones and mHealth intervention technology, such as phone apps or programs, text messaging, to connect adolescents with sexual health and education services in younger age groups [23]. To alleviate concerns about the safety, liability, and regulation of mHealth services [24] The World Health Organization has created guidelines outlining standards for the content, context, and technical features of mHealth interventions [25], mHealth interventions have been shown to engage adolescents in HIV prevention and care [26] or providing sexuality education to adolescents but often not at the same time, many mHealth interventions have been implemented in SSA to help young people access information about HIV [27], [15] and to assist health care systems in providing effective comprehensive health services [38],[39],[40].

CONCLUSIONS

The use of digital-based educational media or mHealth promises to increase reproductive and sexual health (SRH) knowledge among adolescents, although achieving real behavior change is still an obstacle. Addressing the gap between raising awareness and changing behavior is critical to maximizing the benefits of these interventions. Close this gap and encourage positive behavioral change in young people regarding SRH practices using a comprehensive approach that combines SRH issues, contextually relevant information, technological innovation and inclusive strategies. Better SRH outcomes for young people around the world can be achieved by leveraging AI technology to make mHealth interventions more specialized, adaptive and targeted. Therefore, correct, targeted information and educational materials that are safe,

effective, cheap and acceptable must be available to the public, adolescents, groups or communities to maintain their sexual and reproductive health. This review shows the use and application of digital-based educational resources to improve sexual reproductive health knowledge and behavior.

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