

Effectiveness of Adolescent Reproductive Health Media in HEY (Health Educator for Youth) Activities for High School Students in Indonesia

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In Indonesia, BKKBN (National Family Planning and Population Board) keeps records of all information related to reproductive health including those of adolescents. It regulates all the reproductive health media of adolescents of high schools. Common health risks faced by adolescents in Indonesia are related to unsafe sex behaviors, and drug abuse. This study aimed to analyze the effectiveness of health education delivered via a mobile phone application (Remaja Sehat Mobile Application) in comparison to print media modules. The study measured the effectiveness of the branding campaign by Health Educator for Youth (HEY) in improving adolescent reproductive health as evident through indicators of students' knowledge, attitudes, and self-efficacy. This research is a quantitative study with a quasi-experimental design. The intervention was given to 60 teenagers from 10 high schools with the print module to 30 teenagers and the access to mobile applications to another 30 teenagers. Independent t-test and paired t-test were performed in this study. There were significant differences found between print module and the android based mobile application in self-efficacy measurement with the topic of drug abuse ($p=0.007$). Meanwhile, paired t-test performance showed no significant differences between pretest and posttest of print module ($p=0.084$) and there were significant differences between pretest and posttest of application ($p=0.018$). This means that the mobile application is more effective media and recommended for peer educator activities. The study concludes that HEY Activities can strengthen the role of self-efficacy especially in drug abuse prevention. The mobile application such as Remaja Sehat Application is therefore recommended to use in improving adolescent health.

Key words: HEY activities, adolescent, Indonesia, reproductive health, android based media

BACKGROUND

Adolescence is a transition period from childhood to adulthood. In the transition phase, adolescents are often faced with various kinds of complex problems mentally, socially, and culturally. Many of them find it difficult to solve these problems alone and are prone to unhealthy behavior. According to National Population and Family Planning Agency, 63 million adolescents aged 10-24 years in Indonesia engage in risky health behaviors. Common health risks faced by adolescents are related to unsafe sex behaviors (e.g. sexually transmitted diseases), and drug abuse (BKKBN,2017). The problems become acutely severe also because teenagers have limited access to health information and services. This is caused by environmental factors that can threaten the ability of adolescents as a regenerative group for the existence of human beings.

The current scenario in Indonesia is such that adolescents badly need a health education program which can suit their adolescent characteristics, needs and capacities. In other words, such a program that could be both entertaining and informative. The current media programs are only patronizing their promoters and advertisers and even the information on them is not reliable. Moreover, adolescents' involvement in such media program is only about 8.4%. According to the Adolescent Care Health Service (ACHS), Indonesia needs the implementation of a national level peer education program that is supposed to be adolescent-friendly—which befits the adolescent needs (Muthmainnah & Siswantara, 2019).

The current study aims to highlight one such media based adolescent health program called the HEY (Health Educator for Youth). The HEY program conducts campaigns and activities for young adults and adolescents in high schools of Indonesia. All teachers and students are encouraged to participate in the peer educator activities launched under HEY program (Nurmala & Muthmainnah, 2019). HEY also received a tremendous response from both instructors particularly as it developed their own awareness about sex education and reproductive health in adolescence, which they now can easily transmit to their students. According to Anwas et al (2010), the development of instructor competencies through media support influences directly and indirectly the competency of instructors. Hence, media is one of the best ways to improve the competences of peer educators. The use of media can also impact the learning process (Anwas et al, 2010).

Media can be classified into two types, print media and electronic media. Print media is primarily a module based learning through a schedule. Such learning media with print modules may be helpful to students for individual learning independently outside the classroom. On the other hand, with the development of technology, the electronic media has emerged as an alternative media to aid the learning process. The information technology especially through the internet has definitely enriched the content used in the learning process. Although electronic media offers a promising medium to communicate health information to adolescents

(Siswantara et al, 2019), but if adolescents are increasingly exposed to social media and technology where they can get effective and efficient health information, it is also difficult to determine reliability and authenticity of such media material. Any unauthentic and malafide information which is not evidence-based can be harmful to the health of the adolescents.

Such electronic learning media is becoming very popular as peer educator activities, and preferred to print media module based leaning. Adolescents are able to self-access the learning material through electronic methods. This study aimed to analyze the difference in the effectiveness of both types: that is print media (modules) and electronic media. For the purpose of this study an android based application called Remaja Sehat Mobile Application was selected. This study also measured the effectiveness of HEY activities in improving adolescents' knowledge about reproductive health. It highlighted the indicators of students' knowledge, attitudes, and self-efficacy.

LITERATURE REVIEW

A global survey report of WHO (2017) maintain that special care needs to be taken for preserving adolescent health as health problems during this period can potentially affect the quality of life, including the reproductive process (WHO,2017). In Indonesia, this awareness is very much needed for several reasons: first it is a low middle-income country suffering severely from child marriages (Wodon, 2017) causing serious health issues due to early marriages (Monica, 2003). These issues are more prevalent in high schools of cities like Jakarta, Surabaya, Bandung and Yogyakarta (Sari, Darmana & Muhammad, 2018). Yogyakarta particularly suffers from premarital sex as reported by Yogyakarta Provincial Health Office where as many as 1.078 adolescent births had taken place during the school age out of which 976 were impregnated out of a legal wedlock (Kresna, 2016).

Such a situation gets worse when these adolescents, besides unplanned pregnancy and abortion, are also exposed to the risks of infectious diseases due to the use of narcotics and other addictive substances thus exposing themselves to HIV/AIDS. (Mellanby, 1995). According to the Indonesia Ministry of Health report (MOH, 2018), the incidence of HIV / AIDS in adolescents (15-24 years) has increased in past few years. The number of people with HIV/AIDS in Indonesia in 2018 is reported 103.759, out of which 13.527 are aged between 20-24 years old. [MOH,2018). Besides premarital sex in adolescents causes sexually transmitted diseases such as gonorrhea, syphilis, and other venereal diseases (Ghebremichael & Finkelman,2013; Subbarao & Akhilesh, 2017). Likewise, maternal and infant deaths are also 2 to 4 times higher in adolescents as compared to age groups of 20-35 (Sari, 2015). The unsafe sex and unplanned pregnancies also contribute to other problems for an adolescent such as dropping out of schools, early marriage, and abortions (Mi, et al, 2019; Tuyisenge, Hategeka, & Aguilera, 2018; WHO, 2018)

Various agencies are contemplating solutions to these problems and promote health among adolescents. For instance, a Demographic and Health Survey was conducted by National Family Planning Coordinating Agency in Indonesia to find out how adolescents could be motivated to become more health conscious (NFPC, (2017) The survey reports suggested that electronic media should be used as the primary source of information to increase their understanding of safe sex, prevention from HIV / AIDS, and other matters related to fertility, pregnancy, and adverse effects of drugs and alcohol on health. Other researches have gained evidence and suggested to disseminate sexual health information through electronic media, particularly to the adolescent who make excessive use of it (Breuner & Mattson, 2016).

A commendable effort to communicate and educate adolescents about sexual health information has been made by Rumah Remaja, which is a central agency and resource platform where parents, guardians and local communities can find information about licensed Child and Adolescent Learning Centers and also report incidences of abuse to authorities and participate in local community-building events. The agency is devoted to Child Care and Early Learning. It made a very useful branding campaign called Health Educator for Youth (HEY). The students in high schools acted as volunteers to provide Peer Educator training to students around them. HEY was designed as a peer educator program using their edutainment media. It also involved the teachers and educators to supervise and monitor its activities. Rumah Remaja also launched a training program to share knowledge about sexual reproduction, drugs, HIV / AIDS, and similar other issues among adolescents.

REMAJA SEHAT MOBILE APPLICATION

One of the initiatives of Rumah Remaja was the launch of an Android-based application called Rumah Remaja Mobile Application. This application which was accessible free through the play store was specifically designed for teenagers and adapted to the needs of adolescents. The application was directly built by adolescents themselves to solve adolescent reproductive health problems. Hence, validated information about puberty, fertility, STIs, HIV-AIDS was collected and stored in this application. With the help of games and simulations, the application further enhanced the knowledge of sexual health in adolescents. The data in the application was updated with the help of technological gadgets and internet resources. It proved a useful application for parents too who used it as a reference material to provide reproductive health education to their children.

PROBLEM STATEMENT

Indonesian adolescents and youth often think that dating elevates their social position. However, such unpremeditated dating behavior affects negatively and often results in such issues like premarital sex and addition to unsafe sex, with disregard to reproductive and physiological prerequisites. Indonesian teenagers are however unable to manage healthy

dating and their sexual impulses lead to deviating behavior (Suryoputro,2006). Such a situation requires specific attention otherwise it might lead to more serious issues and fatal consequences such as pre-marital sex, early marriages and abortion, marital conflicts, health disorders, venereal disease, and even mortality due to pre-mature exposure to reproductively. (Nugroho, Saluhayah , Purnami & Kristawansari, 2017). A study by National Family Plan Coordination Board (Badan Koordinasi Keluarga Berencana Nasional/BKKBN) found about 23% of teenagers in Indonesian high school and university indulged in sexual intercourse out of which 20% committed abortion and 45 AIDS cases were also found (Pakasi, 2017; Dirjen, 2011)

Sex education at school is also not delivered as a particular subject but is integrated through health and sports classes and courses like biology, social sciences, and religion (Utomo, McDonald & Hull, 2012). Moreover, there is also ambiguity about sex education currently provided at schools which lacks a correct understanding of the reproductive health and it fails to prevent the increase of teenage sexual crime prevalence (Holzner & Oetom,2004). Another problem faced in most schools is lack of a strategic reproduction health education target. It means that in a country where >50% of population is students there should be a curriculum policy, infrastructure and resources for sexual health education which is unfortunately missing in Indonesian school education system (MOH, 2018).

This research however aimed to assess the impact of audio-visual media to the increasing of sexual-reproduction knowledge High School students. One solution to the problem of dealing with a low reproductive index is the launch of an Android-based application “Rumah Remaja”. The application is a media specifically designed for teenagers and adapted to the needs of adolescents. The application can be accessed easily and free in play store. The application development involves the participation of adolescents. In the application, information provided is about puberty, including the primary and secondary characteristics of puberty, fertility, STIs, HIV-AIDS, thus developing games and cases that can add to the knowledge and affective aspects of adolescents.

MATERIALS AND METHODS

Design

This research is attempted as a study of determining the level of reproductive health literacy among Indonesian adolescents. Therefore, it mapped the adolescents’ preferences of different types of media, namely between the print modules and Remaja Sehat Application media. The objective was to find out which of the two communication methods disseminated reproductive health information more effectively. The study was carried out as a quantitative research with quasi experimental research design. This was a kind of open research as there was an intervention over participants but without any randomization. The participants were chosen by using the inclusion criteria in order to obtain effective results.

The focus of this study centered on adolescents' problems arising from lack of awareness and accessibility of sexual health information in high schools. The study also considered it a problem of the whole society as it had long term impact on the health of the people. For this reason, this study aimed at studying behavior of media channels and their availability and accountability to provide sufficient and adequate sexual health education to the adolescents in high schools of Indonesia.

Participants

Sixty Participants were selected from ten high schools in Surabaya, Indonesia. These high schools belonged to various regions in Surabaya. The students were selected based on their prior experience in peer educator activities. These sixty sampled students were in different age groups. In order to carry out research, they were formed into two groups. The first group comprised thirty students from five high schools who were segregated for the print module research tool; the second group also comprised thirty students from another five high schools who were intervened for the android based Remaja Sehat Mobile Application. All participants were informed about the purpose of the study. They were motivated to participate in the research as they understood that a right orientation about sexual health real guidance was required for a confident living. They were also told prior to the study that the data gathered would be utilized for research, and that data and records would be safe and confidential. They were also explained about the purpose and the benefit of approval or informed consent.

Data collection

The primary data for this study was collected by distributing self-administered questionnaires to all sixty participants. The questionnaire was surveyed on three indicators of competencies namely students' knowledge, attitudes, and self-efficacy. The questionnaires contained 30 closed ended structured items whose findings were later triangulated through a pretest and a posttest. This questionnaire was distributed directly to students via social networking and media links.

These questions directed the participants to record their responses based on their perception about sexual health orientation and the use of the right media. These questions also dealt with causes of the problems and issues among the adolescents' related to sexual indiscipline, rise in pre-marital sex, abortions and like. The questionnaire contained on common issues that have led to failure in accounting courses over past few years. Results of the questionnaire were demonstrated through calculation of the frequency and percentage of each response. In search for statistically significant differences among the frequencies of participants' responses, the chi-square procedure was applied. All statistical procedures were carried out using SPSS software (v.25).

Data Analysis

The primary purpose of this study was to find out whether any type of media was competent enough to provide reliable and authentic sexual health education to the young adults and adolescents of Indonesian high schools. After administering the questionnaire and the pretest and posttest after an interval of two months, a descriptive and analytical data analysis was carried out. The descriptive analysis was presented in tabular form to determine characteristics of the participants in this study. The analytical analysis exhibited differences in competencies between media methods, namely the print module and the android based Remaja Sehat Application. This was done by conducting an independent t-test. Meanwhile, a paired test was performed to determine the differences between pretest and posttest. As $P < 0.05$ is widely accepted as significance level for tests in health studies, it was accepted for this study too. The actual p-values and the indication of significance level were ($**P < 0.01$, and $*P < 0.05$).

RESULTS

The questionnaire consisted of a total of 30 items, using a unipolar Likert scale with six levels of answers which reflected the largest or smallest level of agreement in relation to the opinions about their attitude, knowledge and self-efficacy or their feeling and behavior towards sexual health orientation through print modules and android based electronic media. Since all the participants were adolescents and sampled from similar backgrounds and situations, there was nothing specific in this sample to draw any variation of assumptions about ideas, opinion, or interaction for each item in the questionnaire. The internal consistency coefficient Alfa Cronbach was used for the reliability assessment of the questionnaire and this procedure was applied to all 30 items that formed the questionnaire obtaining a value of 0.773. To reduce the scale based on the established theoretical dimensions, an analysis of the main component was also carried out using the factor analysis of the scale, resulting in six factors that explained <53.25% of variance, which is acceptable in such tests.

This sampled group of sixty adolescents represented a population that suffered from acute social stigma of sexual indiscipline leading to many issues like premarital sex, early marriages, and abortions and like. Therefore, the data obtained was confirmed, clarified, and triangulated through other tests, observations and documentation. For this purpose, informal views were also collected from teachers and parents.

Table 1 states the characteristics of participants of this study for both types of media, the print module and the android based application.

Table 1. Characteristics of participants

Characteristics	Print Module		Android based Application	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Gender				
Male	15	50.0	8	26.7
Female	15	50.0	22	73.3
School Origin				
State-own	24	80.0	24	80.0
Non state-own	6	20.0	6	20.0
Total	30	100.0	30	100.0

The above characteristics of the participants consisted of gender and school origin. Over seventy percent female students who participated used the Remaja Sehat Application (73.3%) while most of participants came from state-owned school (80.0%).

Table 2 presents the results of the three variables of the study: knowledge, attitude and self-efficacy. These results reflect the opinion of the respondents of the questionnaire. It should be noted that only the data that showed significant difference were included in the content analysis.

Table 2 Effectiveness of Module and Application as Adolescent Health Media

Indicators	Types of Intervention		Independent t-test ⁺
	Print Module [^]	Android Application [^]	
Knowledge			
Sexuality	0,000**	0,000**	0,907
HIV-AIDS	0,184	0,009**	0,261
Drug Abuse	0,004**	0,124	0,203
Attitude			
Sexuality	0,199	0,523	0,393
HIV-AIDS	0,107	0,681	0,444
Drug Abuse	0,227	0,785	0,286
Self-efficacy			
Sexuality	0,246	0,169	0,664
HIV-AIDS	0,273	0,423	0,584
Drug Abuse	0,084	0,018*	0,007**

*p<0.05 **p<0.01

[^]performed by paired t-test

⁺performed by independent t-test

Table 2 shows there are significant differences between print module and android based application in the 'self-efficacy' measurement with the topic of drug abuse ($p=0.007$). Meanwhile, paired t-test performance showed there was no significant difference between pretest and posttest of print module ($p=0.084$); however, there was a significant difference between pretest and posttest of the android application ($p=0.018$). This means that the android application is more effective media currently used in peer educators' activities.

Based on the results, significant not only gender differences were observed among adolescents' behavior towards sexual discipline and following the guidelines. This could be due to cultural prejudice or preconceived notions about health or sexual attraction toward s the opposite sex that would lead to such irrational and irresponsible behaviors.

DISCUSSION

This study compared two types of health promotion media among the high schools of Indonesia targeting the adolescents' sexual behavior. The first type was the print modules which may be a part of their curriculum or given to them by some agency as a promotion material. The second was an android based mobile application called Remaja Sehat Mobile Application. The results and findings of the study revealed that the android based Remaja Sehat Application was a more effective medium than the print module media. The participants involved in this study were all adolescents and regular users of both types of media. They were quite familiar with the print module as well as the mobile application. They knew how both media talked about their health and sexual knowledge.

This study is in accordance with previous researches (Dermawan & Setiawati, 2008; Gazadinda, 2019 Nurmala & Muthmainnah, 2019) which have dealt with peer education of such types. In this research too it was revealed that the participation of adolescents tends to be passive in such peer education activities, with an exception to the ones initiated by HEY campaign. The participants opined that it was due to fact that their authority was limited and they were not involved in the implementation of such campaigns. It was also shared by a few participants that the involvement of adolescent groups outside of school was also very passive and a few of them were not been exposed to such health campaigns. The participants reiterated that adolescents should be involved in such health programs so that these can be adapted to the needs of the adolescents (Siswantara, 2019).

The results of this study also indicate that the use of android based mobile media in health education is more effective than the print media or presentation slides. This is in accordance with previous researches (Strasburger, Wilson & Jordan, 2009; Ekadinata and Widyandana, 2017) which showed how health promotion and education programs through WhatsApp message delivery can effectively improve the knowledge and awareness about yet another important health issue of type 2 diabetes mellitus. Other studies (Hapitria, Padmawati &

Efektifitas, 2017) also produced similar results showing that the mean change in knowledge of a multimedia method was 4.53 with SD 1.99 and the face-to-face method was 1.87 with SD 1.65. As for attitude assessment, the results of the study reported attitude change in favor of multimedia methods measuring 3.77 with SD 4.24 and the face-to-face method was 1.17 with SD 2.15. The mean difference of knowledge of the two media methods was 2.66 with 95% CI (1.71-3.61) and $p = <0.001$. The difference in attitude for the two methods was 2.60 with 95% CI (0.85 - 4.34) and $p = 0.004$ or $p <0.05$. The t-test shows that the multimedia method was different from the face-to-face method in increasing knowledge and attitudes about similar health related issues.

CONCLUSIONS AND RECOMMENDATIONS

To sum up, the aim of this study was to map the patterns of information received from different types of media by adolescents in Indonesia. Through this research, an insight on the use of information media among adolescents when seeking reproductive health information is obtained. It is believed that the findings can be used as a ground for policy making in optimizing information dissemination through the media to improve reproductive health awareness among adolescent. The study found out that the media for adolescent health promotion through applications is more effective than the print modules. The involvement of adolescents is very important in designing health promotion media that is appropriate to the characteristics and needs of adolescents.

From the findings and all issues disclosed in this study, it is important for parents and teachers to make appropriate media available to adolescent children. High schools should consider revising the print modules and the curricula to adapt to the requirements of the adolescents. There should be advisers and peer educators in each school to provide an interface with the adolescents and discuss their issues related to sexual health.

ETHICS STATEMENT

This study received ethical approval from the health research ethics committee, Faculty of Nursing, Universitas Airlangga Number 1392-KEPK. (9 Mei 2019)

AUTHOR CONTRIBUTIONS

The research team conceptualized and carried out the study and also contributed to the writing of this article. The team also served as the mentor for this and provided incessant support during the study and manuscript writing.



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CONFLICT OF INTEREST STATEMENT

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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