

IMPROVING REPRODUCTIVE HEALTH KNOWLEDGE AND BEHAVIOR OF ADOLESCENTS WITH HEARING LOSS

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Abstract. Knowledge about adolescent reproductive health plays an important role, especially for deaf adolescents who have limited access to information and access to reproductive health services. Deaf adolescents are often a marginalized group and do not receive enough attention. This study aimed to determine the reproductive health knowledge and behavior in deaf adolescents in Surabaya City. This research was a one group with the pre- and post-test design. The research was conducted at Junior High School/SMPLB KM Surabaya City, which is the largest special school for the deaf in Indonesia. Research respondents were all students of SMPLB KM Surabaya City grades VII, VIII, and IX as many as 30 students in 2018-2019. The variables studied were knowledge and behavior related to adolescent reproductive health including personal hygiene, puberty, fertile period, and adolescent relationships. Respondents were given a pre-test before getting the materials on adolescent health at school and a post-test afterward. Data were analyzed using a paired sample t-test. The average pre-test knowledge score was 44.77, and after the provision of materials, it increased into 51.93. The results showed that there were differences in knowledge and behavior of reproductive health before and after the materials were given ($p=0.046$). Knowledge and behavior about anemia, menstruation, and correct sanitary napkins were still not well understood. It is important to ensure the level of knowledge and behavior of deaf adolescents so that they can pass through adolescence in a healthy manner. Special assistance can be provided for these adolescents.

Keywords: education, inclusive health, deaf, public health, reproductive health

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INTRODUCTION

Adolescents who are currently in education or studying in junior high school are early teens with an age range of 12-16 years old. Adolescents experience rapid physical, psychological, and intellectual growth and development, resulting in the characteristics of adolescents who have great curiosity and love adventure and challenges (Fitriana and Siswantara, 2018). The phase of changes experienced by adolescents also includes hormonal functions in the adolescents' body which begin to develop and undergo a biological sex maturation process (Winoto *et al*, 2021). Due to the limited self-management abilities, the various changes above will cause many problems for adolescents, one of which is a problem of reproductive health, including personal hygiene. Research shows that the main problem experienced by most Indonesian adolescents is that they do not know what action to take regarding the development and changes they are going through in terms of adolescent reproductive health, as evidenced by the low knowledge of adolescents about reproductive health; only 29% of female adolescents and 32.3% of male adolescents understand the problem (Natalia *et al*, 2020). This can happen because of a lack of access to health information, skills, and adolescent reproductive health services, including a lack of discussion on sexual and reproductive health issues because many people still consider this topic taboo to talk about (Madhivanan *et al*, 2020).

Personal hygiene is very closely related to reproductive health because actions in maintaining one's hygiene and health greatly affect the quality of reproductive health directly or indirectly (Angrainy *et al*, 2021). Reproductive health includes overall physical, psychological, and social well-being and also includes diseases related to physiological and reproductive processes (Permatasari and Suprayitno, 2021).

School is one of the environments in education that plays a very important role in reproductive health because most teenagers spend their daily time at school, and school is one of the institutions that has the opportunity to reach a large number of adolescents. According to the Ministry of Education' policy, reproductive health materials in the form of physical, biological, psychological, and social aspects can be provided by teachers to students through Biology/ Science, Sports, and Religion lessons, while consultations can be carried out by Guidance and Counseling (BK) teachers (Rusady *et al*, 2017).

Adolescence is marked by the onset of puberty, namely menstruation in girls and wet dreams in boys. This change requires an appropriate response from adolescents, parents, and teachers to ensure that adolescents know how to keep their genital organs clean to avoid infection. The prevalence of reproductive tract infections due to a lack of personal hygiene in the genital organs is still quite high, and the number of sufferers of reproductive tract infections in Indonesia is 90,100 cases per 100,000 population per year, including those experienced by young women. This infection is caused by a lack of personal hygiene, especially vulvar hygiene during menstruation. This shows that personal hygiene is very important because if it is not applied properly, it will cause reproductive tract infections (Angrainy *et al*, 2021). If adolescents with normal hearing are known to have a low level of knowledge on reproductive health and personal hygiene, then adolescents with hearing loss have more difficulty in knowing reproductive health and personal hygiene. As one case in Nigeria, deaf adolescents have a lower level of knowledge about reproductive health than adolescents who have normal hearing (Idiong *et al*, 2021).

The real challenge in providing education about reproductive health and personal hygiene to deaf adolescents is the difficulty in communicating. Most of the deaf are accompanied by mute, so the delivery of information can be constrained. Moreover, not all places have sign language services, display line texts, or provide interpreters. This further shows the gaps and injustices among adolescents with hearing loss in achieving equal rights to information and education, including those related to reproductive health and personal hygiene (Demang and Dewi, 2020). Therefore, it is very important to know the level of knowledge and behavior related to reproductive health in deaf adolescents. Various efforts to increase knowledge and access to information must continue to be carried out to achieve health for all, including the deaf group.

MATERIALS AND METHODS

Study design and settings

This research was a one group of pre- and post-test design. There were 3 steps, namely giving a pre-test, delivering materials by giving a reproductive health education module, and giving a post-test. The materials were presented

with brief and easy-to-understand explanations for deaf students and were given pictures and even props (pads, underwear, toiletries, *etc*). Materials were given according to a schedule in stages every week with a personal approach and assistance. The materials provided included personal hygiene, anemia, puberty, wet dreams, menstruation, safety pads, the use of sanitary napkins, and healthy relationships. The pre-test and post-test consisted of 40 questions with 28 knowledge questions and 12 behavioral questions from 7 topics.

Sample selection and sample size

The respondents of this study were students of Junior High School/ SMPLB KM in Surabaya City, which is one of the largest special schools for the deaf in East Java Province and even in Indonesia. Respondents were all deaf students in grades VII, VIII, and IX, totaling 30 people aged 15-17 years old.

Data collection

Data were obtained through a pre-test and post-test conducted on each respondent. Pre-test and post-test were conducted on each topic of reproductive health materials. The pre-test and post-test on knowledge and behavior were scored 0 if the answer was wrong and 1 if the answer was correct with a weighted value of 2 for knowledge and 4 for behavior.

Statistical Analysis

The data were statistically tested with a paired sample t-test to determine the differences in knowledge and behavior before and after the delivery of the materials.

Ethical approval

This study was approved by the Research Ethics Committee Public Health Faculty, Universitas Airlangga, Indonesia (No. 426-KEPK). Written informed consent was obtained from each study subject and their parents

prior to inclusion in the study.

RESULTS

The majority of deaf students were in grade VIII, and most of them were male. There were students who used hearing aids and those who did not, and the majority of students did not receive hearing loss therapy so that their communication skills used a sign language, writing, or lip reading. The characteristics of the respondents involved in this study can be seen in Table 1.

The results of the pre-test and post-test of knowledge and behavior related to reproductive health can be seen in Table 2. In Table 2, it can be seen that there was an increase in the results of the pre-test with the results of the post-test. There was an increase in the average pre-test and post-test results of 7.16. There was no significant difference in knowledge before and after the intervention if tested on knowledge only ($p=0.127$). This means that basic reproductive health education has not increased students' knowledge. However, there was a significant difference in behavior before and after the intervention when testing only the behavior variable ($p<0.001$). This shows that basic reproductive health education has increased student behavior. Meanwhile, the results of the paired t-test on the two variables, namely knowledge and behavior simultaneously, showed that there were differences in knowledge and behavior of reproductive health before and after the materials were given ($p=0.046$). This means that all materials can improve the knowledge and behavior of deaf students.

Respondents' understanding of the reproductive health education module for junior high school students which contains 7 topics, namely personal hygiene, anemia, puberty, wet dreams, maintenance of cleanliness during menstruation, smart ways to choose sanitary napkins, and healthy relationships has different levels, as can be seen in Fig 1.

The graph of the respondents' understanding of the module shows that the topic that was the easiest for respondents to understand was the topic of puberty, while the chapter that was the most difficult to understand was how to choose sanitary napkins.

Table 1
Characteristics of deaf students

Characteristic	Frequency, <i>n</i> (%)
Grades	
VII	8 (26.7)
VIII	12 (40.0)
IX	10 (33.3)
Sex	
Male	16 (53.3)
Female	14 (46.7)
Using hearing aids	
Yes	15 (50)
No	15 (50)
Hearing loss therapy	
Yes	7 (23.3)
No	23 (76.7)

Table 2
Distribution of test scores of deaf students at junior high school (N = 30)

Test	Minimum score	Maximum score	Mean score \pm SD
Pre-test of knowledge and behavior	17	69	44.77 \pm 13.080
Post-test of knowledge and behavior	10	83	51.93 \pm 17.650
Pre-test of knowledge	4	16	13.53 \pm 4.370
Pre-test of behavior	3	12	4.70 \pm 1.390
Post-test of knowledge	4	13	15.23 \pm 4.940
Post-test of behavior	0	12	6.03 \pm 2.270

SD: standard deviation

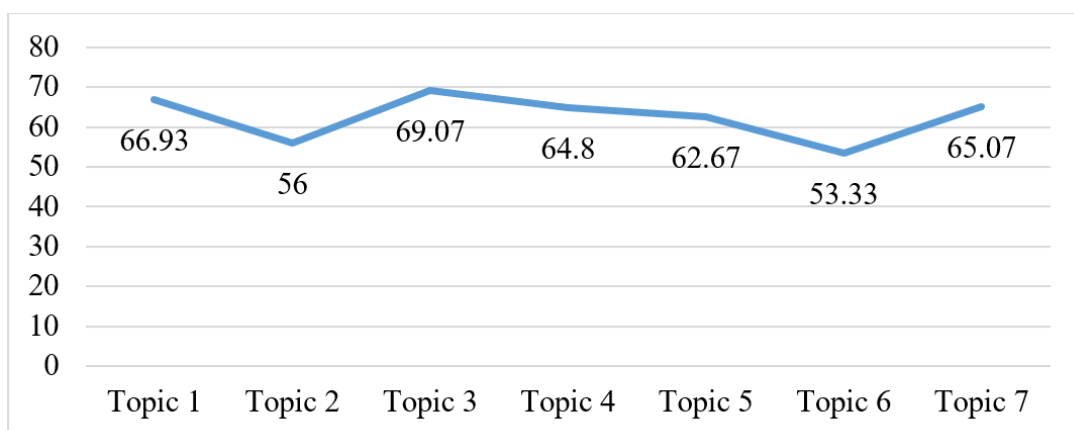


Fig 1 - Average knowledge of the reproductive health topics

Note: Total score of the test is 100.

Topic 1: personal hygiene; Topic 2: anemia; Topic 3: puberty, Topic 4: wet dream; Topic 5: menstruation; Topic 6: safety pads and the use of sanitary napkins; Topic 7: healthy relationships

DISCUSSION

The importance of adolescent reproductive health education in deaf adolescents

Due to the fact that most of the respondents did not receive therapy for hearing loss, and only 50% of respondents used ABD (Hearing Aids) (Table 1), as a result, they might find difficulties in receiving sounds and information. Therefore, the majority of communication between deaf students used a sign language using the SIBI (Indonesian Sign Language System) method. Media selection is a very important part of conveying information to students accompanied by pictures, photos, or videos and practice to make it easier for deaf students to accept and understand the information. The information provided will be easily received by using all communication

approaches mentioned above to facilitate the delivery of reproductive health materials. Moreover, in Indonesia, not all sources of information and services for adolescents regarding reproductive health are facilitated with facilities and infrastructure that support the needs of deaf adolescents, such as being accompanied by a sign language, interpreter officers, or line texts. Adolescence is the most vulnerable stage in a child's life, so it is necessary to have a strong foundation since adolescence regarding a healthy lifestyle and be responsible for all actions that need to be carried out since adolescence, including maintaining personal hygiene and reproductive health (Josephine *et al*, 2022). Decision-making by adolescents in daily behavior needs to be based on the right knowledge, including sexual and reproductive health as one of the main factors that can prevent reproductive health problems. Education to maintain personal hygiene and reproductive health is a protective factor in dealing with negative behavior in adolescents related to themselves and in associating with the opposite sex. In Laos, there is a study that states that the quality of curriculum-based sexual education programs in secondary schools can increase the knowledge, understanding, and capacity of young students about sexual and reproductive health (Vongxay *et al*, 2019).

Reproductive health includes everything related to reproductive and sexual health to prevent diseases and maintain and restore the function of reproductive and sexual organs. By providing good reproductive health information and optimal reproductive health services to adolescents, it is hoped that adolescents will be able to apply it in daily life by having healthy behavior and being responsible for their reproductive health. This is no exception for adolescents with hearing loss although the communication is indeed hampered and difficult. The condition of adolescents with hearing loss is also often accompanied by limitations in verbal language, resulting in limited access to personal hygiene and reproductive health information. Physically, the growth and development of deaf students are normal as teenagers at their age. However, because not all students get an explanation from their parents and at school, their understanding is still not optimal, resulting in their knowledge and behavior. This happens because very few materials on personal hygiene and reproductive health are delivered because these materials are included in the subject matter at school which is limited in time and portion. Details and assistance are, therefore, needed by deaf students in understanding each

material presented. In addition, evaluation is certainly very necessary to ensure the materials have been known, understood, and practiced. As the results of this study, reproductive health materials should be delivered by biology/science and religion teachers, the material provided is still very little, especially when monitoring and evaluating personal hygiene behavior and reproductive health.

Some studies even show that adolescents with disabilities, including the deaf, are more likely to become victims of bullying and sexual harassment. Indeed, this can be minimized by increasing knowledge and proper behavior regarding reproductive health.

The government's role in realizing this is by providing reproductive health services that are friendly to deaf adolescents. This need can be facilitated in schools by optimizing the role of teachers and the function of the UKS (School Health Unit) with inclusive services (Soenarnatalina *et al*, 2019; Suariyani *et al*, 2020).

Adolescents need positive information as a basis for shaping their behavior in living their lives, including maintaining personal hygiene and reproductive health until they are adults (Kumalasari *et al*, 2020; Natalia *et al*, 2020). Adolescent reproductive health education should be an integral part of the school curriculum and be facilitated by trained teachers, health counselors, and health workers (Madhivanan *et al*, 2020).

Reproductive health issues are still considered taboo and improper to be discussed by the public because they are related to individual privacy and are uncomfortable to discuss with other people. Paying attention to reproductive health is very important, especially during adolescence because adolescence is the initial stage to learn about reproductive health and personal hygiene, including the period of menstruation and wet dreams which are signs of puberty. How to maintain the cleanliness of the genital organs is very important to know and do by teenagers, both girls, and boys. If the maintenance of health and hygiene of organs is neglected, it can lead to many diseases and infections of the reproductive tract (Angrainy *et al*, 2021). Personal hygiene includes efforts to maintain the cleanliness of all body organs from head to toe, which aims to prevent various diseases (Pal and Pal, 2017).

Deaf teenagers have difficulty communicating and socializing with other people, including getting education on oral and dental health. This happens because the strategies and media for providing education that have been provided have not been able to accommodate the needs of adolescents with hearing loss/deafness (Moin *et al*, 2021).

Knowledge and behavior of reproductive health of deaf adolescents

After being given materials on reproductive health with a personal approach, based on the results of this study, there was an increase in knowledge and behavior of deaf adolescents. The average knowledge score of the pre-test was 44.77, and after the materials were given, it increased into 51.93. Furthermore, it is known that deaf adolescent girls and boys experience limitations in communication, have limited access to information about how to maintain the cleanliness of the genital organs, and have a low level of knowledge about it. The results of the pre-test showed that the respondents did not have good knowledge to maintain the cleanliness of their reproductive organs. The level of knowledge increased after the respondents were given the materials on reproductive health, as shown in the post-test results. Other studies have shown the same results, stating that deaf adolescent girls have poor knowledge about reproductive health (Salah *et al*, 2021). With the right educational method, the information provided can be accepted and understood by deaf teenagers so that they can increase their knowledge optimally (Arunachalam *et al*, 2020).

The problem most often faced by deaf adolescents is the limitation in communication. This is due to several cognitive problems related to information retention abilities, limited vocabulary, difficulties in understanding abstract knowledge, and limited language comprehension abilities. Some of these shortcomings and difficulties have an impact on the lack of knowledge among deaf adolescents, including those related to personal hygiene and reproductive health. In terms of sexual development, deaf adolescents have the same developmental stages as normal adolescents. These conditions can increase the risk of unsafe sexual behavior because hearing limitations result in a lack of information they get (Ariantini *et al*,

2017). This is also reinforced by school data which explain that deaf students do not have sufficient knowledge and some even have vaginal discharge problems and menstrual disorders. The reproductive health needs of adolescents with disabilities, including hearing loss, are the most pressing needs for access to adequate reproductive health information related to their condition (Demang and Dewi, 2020).

Based on the results of the study, the material that respondents did not understand was the chapter on anemia and how to choose sanitary napkins as indicated by the lowest average value in Fig 1. This indicates that the lack of knowledge about anemia related to reproductive health in deaf adolescents is an indicator that information on anemia has not been well received. The condition of anemia can be caused by a lack of iron intake that does not meet the iron needs of adolescent girls who have experienced menstruation. About 15% of adolescent girls are anemic, and most of them come from developing countries. Lack of iron in the body can reduce neuropsychological functions (psychomotor, mental, behavioral, and cognitive functions) of adolescents, which can interfere with the capacity and ability of students to excel in school (Atmaka *et al*, 2020). This situation, if left unchecked, will result in many unfavorable conditions in the future. Furthermore, it is known that anemia is more common in girls than boys (Dewayanti *et al*, 2021). Empowerment of women starting from adolescence, including increasing their level of knowledge, plays an important role in preventing anemia (Mitkari *et al*, 2020).

The material that was not understood by the respondents apart from anemia was how to choose right sanitary napkins. To maintain reproductive health in adolescent girls, it is important to pay attention to the cleanliness of the genital organs during menstruation. One way is the use and selection of the right pads. The sanitary napkins used must be hygienic because they will be in direct contact with the surface of the female reproductive organs. In addition, it is necessary to pay attention to the long-term impact of the sanitary napkins used on women's health. Data from UNICEF stated that many as 99% of respondents in urban areas and 97% of respondents in rural areas used disposable sanitary napkins during menstruation in 2015 (Warashinta *et al*, 2021). Currently, there are many choices of sanitary napkins such as reusable menstrual pads and menstrual cups that are more

environmentally friendly and claimed to be healthier for women. The most important thing to note is that hygiene must be maintained, especially during menstruation to prevent reproductive tract infections. On the other hand, the material that was most easily understood by respondents was puberty. This shows that deaf teenagers can already understand the material given related to puberty. This is a topic that is closely related to adolescents because during their teenage years they experience puberty which is marked by wet dreams for teenage boys and menstruation for teenage girls.

This study shows that providing education with a method that is appropriate to the needs of deaf adolescents can increase their knowledge regarding reproductive health. However, there are still some aspects that cannot be understood well because the understanding of those materials requires more frequent education to foster good knowledge and understanding. It is, therefore, necessary to integrate all parties and government support so that every line of formal education in schools requires the provision of reproductive health education according to the age and conditions/limitations of deaf adolescents. In addition, it is necessary for parents to participate in continuing education and practice personal hygiene and reproductive health at home so that deaf teenagers can receive continuous health education. The provision of reproductive health education for deaf adolescents requires materials that are in accordance with their needs and appropriate learning methods to facilitate the transfer of information to deaf adolescents. This is done to ensure the fulfillment of the reproductive rights of disabled adolescents.

ACKNOWLEDGMENTS

The authors would like to thank the participants of this study for their cooperation and express gratitude for the support provided by the Faculty of Public Health, Universitas Airlangga, and Special Junior High School KM Surabaya City.

Research funds were obtained from the Faculty of Public Health, Universitas Airlangga.

CONFLICT OF INTEREST DISCLOSURE

The authors declare no conflict of interest.

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