

Analysis of HIV and syphilis transmission prevention programs: how to implement them for adolescents

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Abstract

Objectives: Adolescents tend to want to try everything that they have not yet experienced. The main factor that causes this is curiosity about what adults do, including sexuality. The aim of this study is to analyze HIV and syphilis transmission programs for adolescents in North Sumatra. **Methods:** We used a cross-sectional design analytical survey by taking 729 people as a sample of the total adolescent population of around 19.4%. Non-random tools and interview materials using questionnaires adopted from The Prospero Network were made through an online platform. Then the results were transferred into a statistical-based application for descriptive data analysis and bivariate (chi square) and multivariate statistical tests (multiple logistic regression). **Results:** We found that less than 50% of respondents conducted HIV and Syphilis free examinations through the laboratory and reactive confirmation tests through health facilities. Statistical test results showed that all variables were related and the risk to be up to 160.7 times in bivariate and 176.3 in multivariate. **Conclusion:** Not conducting HIV and Syphilis transmission prevention programs for adolescents entails a high risk, and the government and community must work together so that these programs always run well. **Keywords:** adolescents, health program, HIV, syphilis.

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Introduction

Venereal disease has long been known in Indonesia. Scientific advances led to the term no longer being used and changed to Sexually Transmitted Disease (STD). The term STD was then changed in 1998 to Sexually Transmitted Infection (STI) to include asymptomatic sufferers. Sexually transmitted infections (STIs) are infections that are transmitted from one person to another through sexual intercourse¹.

Adolescents are particularly vulnerable to STI transmission because risky behavior, which can easily occur due to promiscuity, is exacerbated by the lack of information about reproductive and sexual health, including STIs. As a result, promiscuous and risky sexual activity is quite high, which can lead to adolescents contracting STIs and even HIV/AIDS².

The phenomenon of free sex amongst adolescents in Indonesia is of increasing concern to the authorities. Data from the results of a survey conducted by the Indonesian Child Protection Committee (KPAI), cited by Nurmaguphita, stated that as many as 32% of adolescents aged 14-18 residing in big cities in Indonesia (Jakarta, Surabaya, Bandung and Yogyakarta) had sex. The results of another survey also stated that one in four teenagers in Indonesia had premarital sex and proved that 62.7% of adolescents lost their virginity while still in junior high school. In Indonesia, there are about 4.5% of boys and 0.7% of girls aged 15-19 years who claim to have had premarital sex. Amongst adolescents aged 15-19 years, the largest proportion dating for the first time is constituted by those aged 15-17 years. Around 33.3% of girls and 34.5% of boys aged 15-19 years started dating when they were not yet 15 years old. Authorities fear that, at this age, they still do not have adequate

life skills, which leaves them at risk of exercising unhealthy dating behaviors, such as premarital sex³.

Adolescents tend to engage in forms of sexual behavior such as holding hands, dry kissing, wet kissing, hugging, fantasizing or imagining, fingering, masturbating, petting and oral sex, which are condemned by the authorities. In general, teenagers have a high curiosity. Teenagers tend to want to explore everything and try things that they have never experienced before. Apart from being driven by their desire to be like adults, teenagers want to try what adults do, including having sex.⁴

Although it tends to fluctuate, data on HIV/AIDS cases in Indonesia continues to increase from year to year. The number of HIV cases in Indonesia reached its peak in 2019 with 50,282 cases. Based on WHO data, in 2019 there were 78% of new HIV infections in the Asia Pacific region. The highest AIDS case rate for the last eleven years was in 2013, with 12,214 cases. In 2017, the five provinces with the highest number of HIV cases were East Java, DKI Jakarta, West Java, Central Java, and Papua. As Figure 3 shows, the provinces with the highest number of AIDS cases are Central Java, Papua, East Java, DKI Jakarta, and Riau Islands. AIDS cases in Central Java constitute about 22% of the total cases in Indonesia. Java was the region highest in HIV and AIDS cases from 2017 to 2019⁵.

According to UNAIDS Indonesia from 2020, around 5,000 people are infected with HIV every day worldwide, including 4,400 adults (over 15 years old) and 47% of the 4,400 people are women. In southern and eastern Africa, the incidence of HIV in young women (15-24 years) accounts for 26% of HIV infections. Statistics remain high despite widespread prevention campaigns and increased antiretroviral therapy (ART). UNAIDS marks the country's young women as a priority group in HIV prevention to help achieve the global goal of ending AIDS as a public health devastation by 2030 (UNAIDS, 2019). In 2018, the prevalence of HIV in adults (15 to 49 years) in Indonesia was 0.4%. The estimated number of people living with HIV is 220,000 for women (>15 years), 400,000 for men (>15 years) and 640,000 (0 to 14 years) for children⁶.

According to North Sumatra Provincial Health Office data, in 2019, 1,709 new HIV positive cases were reported, an increase compared to the number of new cases (1,498) reported in

2018. On the other hand, the number of AIDS cases tends to fluctuate. The number of AIDS cases in 2019 was 788, a decrease compared to the 881 cases reported in 2018. The decline in the number of AIDS cases could be due to a decrease in the number of cases reported by districts/cities. Cumulatively, the number of AIDS cases until 2019 was 1,143⁷.

According to data from WHO, more than 1 million people suffer from STDs, including the four most common types of disease: chlamydia, gonorrhea, syphilis, and trichomoniasis. More than 500 million people are still living with genital herpes infection, and about 300 million women in the world suffer from Human Papilloma Virus (HPV) infection, which is the main risk factor for uterine cancer. 7 Efforts to control STDs in Indonesia have been promoted by the government, but the number of STD sufferers has not shown a decline. In 2017, the incidence of syphilis in the age range of 15-19 years, according to the health profile of North Sumatra, was 165 for men and 148 for women⁸.

In the city of Medan, North Sumatra, the Medan Plus Non-Governmental Organization, which focuses on HIV/AIDS research, reported 139 cases of children infected with the HIV/AIDS virus, with a percentage of 81 (Lk.): 58 (Pr) who have not received special protection and treatment from parents, family, community, the local government, the central government and the State. Some of the children infected with HIV/AIDS in Medan City are neglected by their families and have not received protection from acts of discrimination and violence. Often, children infected with HIV/AIDS are stigmatized by both the community and school educators⁹.

According to P2P data reported from April to June 2019 the total number of PIMS cases with diagnosis based on a syndrome approach and laboratory examination according to the highest risk group were High Risk Couples (4,741); Female Sex Workers (3,660); MSM (3,600); Sex Worker Customers (1,274); Waria (399); injecting drug users (84); and Male Sex Workers. The number of reported cases of Urethral Tract Dilation (UTD) was 1,968, and 270 cases of genital ulcers/genital ulcers were reported. UTD cases decreased during the first quarter of 2019 (from 2,134 cases to 1,968 cases) and Genital Ulcers increased compared to those reported in the first quarter of 2019 (from 242

cases to 270 cases). Syphilis is a sexually transmitted infection (STI) which is still a global problem. Many adults are infected with this disease. Syphilis not only causes morbidity, but can also cause death for sufferers. Pregnant women who suffer from syphilis can transmit congenital syphilis, which can cause congenital abnormalities and death¹¹.

Methods

This study used an analytical survey approach with a cross-sectional design. The population of this study is people who are teenagers vulnerable to HIV and syphilis infection, and who reside in North Sumatra Province. Geographically, North Sumatra Province is located in the northern part of Sumatra Island. It harbors the largest population in Indonesia, around 14.9 million people in 2021, of which 19.4% are teenagers (15-24 years old). From the total population, a sample of 729 people was taken non-randomly using a quota sampling technique to represent the total population. This research has obtained ethical clearance from the Research Ethics Committee of the Faculty of Medicine, Islamic University of North Sumatra (No. 330/ EC/ KEPK. UISU/ XII/ 2022).

Respondent interviews were conducted using online-based questionnaires based on instruments sourced from The Prospero Network, which use several questions that index characteristics and indicators of HIV and Syphilis¹². Respondents were informed of the goals and objectives of the study, and they gave their oral consent to participate in the study. After conducting the interviews, the results of the interviews were transferred to statistical-based software and went through several stages in the form of coding, cleaning, editing and processing. Afterwards, the data was analyzed descriptively and used to find out the summary of the statistical results and the characteristics of the respondents. Statistical tests were applied in this study using chi square and multiple logistic regression to obtain the crude goods ratio (CGR) and adjusted goods ratio (CGR), with a significance level of alpha (α) for all analyses of 5% ($p < 0.05$).

Results

It was found that more than 60% of the respondents were male, aged 13 to 18 years. Furthermore, it is known that half of the

respondents' parents are married. However, only >20% of people were Batak ethnic, of Muslim religion and had parents whose highest grade was tertiary education (Table 1).

Table 1. Demographic Characteristics of Respondents (n = 729)

Variables	Frequency (%)
Gender	
Male	485 (66.5)
Female	244 (33.5)
age	
13-18 years	641 (87.9)
19-25 years	88 (12.1)
Ethnic/ethnic	
aceh	125 (17.1)
Batak	192 (26.3)
Buton	163 (11.9)
Javanese	130 (17.8)
Malay	119 (16.3)
Parents	
Married	373 (51.2)
Divorced	356 (48.8)
Parents' Education Level	
elementary	184 (25.2)
juniors	167 (22.9)
High School/Vocational	178 (24.4)
High School	200 (27.4)
Religion	
Islam	178 (24.4)
Christian	144 (19.8)
catholic	123 (16.9)
Hindu	94 (12.9)
Buddha	108 (14.8)
Confucian	82 (11.2)
Implementation of HIV and Syphilis Prevention Programs	428 (58.7)
Fast and Free Laboratory HIV Examination	395 (54.2)
Time Required for Late HIV Examination Visits	335 (46.0)
Counseling Results After the Post-Test Tested HIV Negative Late	460 (61.7)
Post-test Counseling Results Declared HIV-Positive	190 (26.1)
Conducted HIV Reactive Confirmation Test Through Direct Examination to Health Facilities	617 (84.6)
Didn't Ask for Referral - HIV Check-up at Health Facilities	374 (51.3)
HIV Positive Cases and Requesting Referral to Health	127 (17.4)

Facilities Receiving Information Related to HIV Care	364 (49.9)
Not Accompanied to Facilities Health Prior to Referral for HIV Treatment	453 (62.1)
Routine Syphilis Examination Through Fast and Paid Laboratory Tests	545 (74.8)
Syphilis Confirmation Test Through Examination Using Referral Letters to Health Facilities	421 (57.8)
Not Willing To Do Referral for Syphilis Examination at Health Facilities	460 (63.1)
Not Receiving Information Related to Syphilis Treatment Not Accompanied by Health Care Workers Before Referred To Health Facilities For Further Treatment	350 (48.0)

The results of the study showed that >50% of respondents had gotten free HIV and laboratory tests although there were differences in testing of syphilis cases through paid laboratories. The same difference also occurred in patients who carried out an HIV confirmation test directly in a health facility. There are also those who check syphilis confirmation tests at health facilities, assisted by referral letters. The time required for HIV examination visits is great, and the results of post-test counseling, when found to be HIV positive, take very long to be reported, and people do not receive information related to syphilis treatment. People were not willing to be referred for further testing for HIV and syphilis in health facilities but were willing to request a referral to a health facility for further examination (Table 1).

Meanwhile, the results of <50% of people who were found to be HIV negative took very long to be reported. They took HIV reactive confirmation tests through direct examinations in health facilities and were not accompanied by health workers before being referred to health facilities for HIV and syphilis treatment and further re-examination (Table 1).

In this study the authors found that the overall variables had a significant relationship ($p < 0.05$) or sig precision of 5% with risks ranging

from 1.1 times to 160.7 times. However, the statistical results showed that several variables that were not significant, namely the time required for HIV examination visits in the slow period, the test results stated positive for HIV in the late category, were not willing to do referrals for further HIV and syphilis examinations at health facilities, received and did not receive information related to HIV and syphilis care in patients, and rapid testing of syphilis cases through a laboratory and for a fee (Table 20.)

Multivariate analysis in this study shows that HIV testing through the laboratory is fast and free, the time required for HIV examination visits is slow. The following five variables are factors that have a significant relationship with the implementation of the HIV and Syphilis prevention program in adolescents with the highest risk by 176.3 times (Table 3): performs HIV reactive confirmation tests through direct examinations in health facilities, is not willing to do referrals, Syphilis examination at a health facility, and not accompanied by a health worker before being referred to another health facility for further treatment.

Discussion

First, availability of HIV testing through fast and free laboratory tests, determines whether HIV and Syphilis prevention programs are conducted amongst adolescents, with a significant risk of 3.11 times. The results of the study conducted by Ahmed, et al, based on test results in the stratified category of laboratory-based sex risk scores with lipids, the majority of the HIV population was classified as low risk (83%) with 12% at medium risk and 5% at high risk. Although the sample size remained limited when stratified by sex and risk category, the prevalence of hypertension remained higher in women compared to men¹³.

Second, not being willing to make a referral for Syphilis examination to a health facility is also one of the causes of the progress of HIV and Syphilis prevention programs in adolescents with the highest risk, which is 176.35 times. According to the results of research conducted by Kinnman, et al. Among all respondents, 436 people (65.8%) reported an interest in using HIVST, and among

those who were interested, 205 (47.0%) expressed a willingness to pay for HIVST. 81 respondents (12.3%) reported having experienced rectal chlamydia, rectal gonorrhea, or syphilis during the previous 12 months. Furthermore, 44 respondents

(6.7%) reported having never been tested for HIV before, and 33 (5.0%) reported having used self-sampling kits for chlamydia and gonorrhea. Being single was found to be negatively associated with willingness to pay (AOR 0.56, CI 0.36-0.88)¹⁴.

Table 2. Relationship of Factors Associated with Adolescent HIV and Syphilis (n=729).

Implementation Factors	HIV and Syphilis Prevention Program		COR (95% CI)	P-Value
	Running (%)	Not Running (%)		
Rapid Laboratory HIV Test and Free	226 (60.4)	148 (39.6)	1.15 (0.86-1.55)	0.036
Time Required For Late HIV Screening Visits	146 (39.0)	228 (61.0)	0.56 (0.42-0.76)	0.000
Post-test Counseling Results are Negative Late HIV	230 (61.5)	144 (38.5)	1.86 (1.38-2.49)	0.000
Post-Test Counseling Results Declared HIV Positive Slow	108 (28.9)	266 (71.1)	0.43 (0.32-0.59)	0.000
Conducting HIV Reactive Confirmation Test Through Direct Examination to Health Facilities	145 (38.8)	229 (61.2)	4.36 (2.99-6.35)	0.000
Not Requesting Referral for HIV Screening at Health Facilities	12 (3.2)	362 (96.8)	0.85 (0.04-0.15)	0.000
Received Information Related to HIV Care	27 (7.2)	347 (92.8)	0.19 (0.12-0.31)	0.000
Not Accompanied to Facilities Health Prior to Referral for HIV Treatment	358 (95.7)	16 (4.3)	112.35 (45.20-273.69)	0.000
Syphilis Routine Examination Through Fast and Paid Laboratory Tests	2 (1.1)	182 (98.9)	0.11 (0.03-0.44)	0.000
Not Willing for Referral for Syphilis Examination at Health Facilities	6 (3.3)	178 (96.7)	0.27 (0.12-0.62)	0.000
Not Receiving Information Related to Syphilis Treatment	5 (2.7)	179 (97.3)	0.30 (0.12-0.73)	0.000
Not Accompanied by Healthcare Professional Before Referral To A Health Facility To Get Further Treatment	182 (98.9)	2 (1.1)	160.75 (39.46-654.76)	0.000

Table 3. Multiple Logistic Regression Analysis of Factors Associated with Adolescent HIV and Syphilis (n=729).

Variables	B	SE	Wald	P-Value	AOR	95%CI
Rapid and Free Laboratory HIV	1.338	0.452	6,320	0.012	3,11	1, 28-7.57
Time Required for HIV Screening Visits Slow	-4,241	0.601	49,763	0.000	0.14	0.04-0.47
Conducting HIV Reactive Confirmation Tests Through Direct Examination to Health Facilities	-2,703	0.633	18,244	0.000	0.67	0.19-0.23
Unwillingness for referral for syphilis examination at health facilities	5,172	0.925	31,276	0.000	176.35	28.7-108.05
Not Accompanied By Health Workers Before Being Referred To Health-th Facilities For Further Treatment	1,528	0.476	10,317	0.001	4.61	1.81-11.71
Constant	3,521	0.521	45,636	0.000	33,827	

Lastly, not being accompanied by health workers before being referred to a health facility for further treatment, was included as cause of the failure of HIV and Syphilis prevention programs in adolescents with an intermediate risk of 4.61 times. This is related to the results of a study by Nabakwe, et al. which found that health workers do not spend time on other aspects of feeding young infants in the context of maternal HIV infection, according to the counseling flowchart derived from HIV, and infant feeding counseling tools based on policies and regulations, such as United Nations guidelines. The mean nutritional counseling score was 23.7% (range 6.7–40) which was poor. Quantitative data shows that a small number of mothers aged 22 (4.1%) are counseled in PMTCT clinics¹⁵

Sexually transmitted infections (STIs) are a public health problem and pose a burden of morbidity and even mortality in developing countries. Preventing and treating STIs can reduce the risk of HIV transmission through sexual intercourse. The presence of STIs in the form of inflammation or ulceration will increase the risk of HIV infection when having unprotected sexual intercourse between someone who has been infected with an STI and a healthy partner. In people with HIV-AIDS (PLWHA), syphilis increases the transmission power of HIV¹⁶.

The solution to this problem was reported through a survey conducted by Rummel, et al. They explained that although there are many sources of information, such as school lessons, public education campaigns, preventive health checks or the internet, many young people still lack information about STIs. In contrast to the high prevalence of HPV in Germany and worldwide, adolescents displayed towards HPV the lowest level of awareness of all the STIs assessed. The gaps in information and lack of knowledge are reflected in this study and indicate the need for extensive and intensive educational work¹⁷.

Other research conducted by Nurjanah and Wahyono using a systematic study found challenges that can be overcome, including lack of information about prevention programs for mother-to-child transmission of HIV, as well as benefits, side effects and in-depth information about ART. The study also found that partner and family involvement have an influence on the running of the PMTCT program. Such involvement includes participation in the treatment process such as: the

activity of checking the viral load and commitment to accompanying the patient to treatment. Patient commitment in carrying out ART therapy is also a challenge because it lasts a lifetime. In addition, the patient's reluctance to reveal their HIV status also becomes a challenge in implementing PMTCT. Another challenge in running the PMTCT program that occurs amongst health workers (health workers, health cadres) includes unbalanced workload with low wages. Furthermore, there are difficulties in ensuring the right PMTCT service for patients. Another challenge is to ensure patient commitment to therapy by removing the stigma. Availability of drugs and HIV test kits is also a challenge in program implementation. In the absence of drugs or the patient's test kit, confidence is lost in the program implemented¹⁸.

Conclusion

This study concludes that although HIV testing through the laboratory is fast and free, there is no willingness to do referrals and patients are not accompanied by health workers when making referrals related to each other with the implementation of the HIV and Syphilis transmission prevention program in adolescents. Therefore, the government, especially program makers, must always evaluate every activity, as well as involve human resources and the community to be involved in program implementation.

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