Original Research

Indonesian Journal of Health Administration
(Jurnal Administrasi Kesehatan Indonesia)
p-ISSN 2303-3592, e-ISSN 2540-9301
10.20473/jaki.v11i1.2023.120-130

ANALYSIS OF HIV AND SYPHILIS TRANSMISSION PREVENTION PROGRAMS FOR ADOLESCENTS

Analisis Program Pencegahan Penularan HIV dan Sifilis Pada Remaja

***Yusuf Hanafi Lubis[1], Susilawati[1]**
[1]Department of Health Policy and Administration, Faculty of Public Health, State Islamic University of North Sumatera, Medan, Indonesia
Correspondence*:
Address: Campus IV, Jl. Lap Golf, 120, Deli Serdang Regency, Medan, Indonesia | e-mail: yusuf.hanafi.lubis@uinsu.ac.id

Abstract

Background: Adolescents tend to want to try things they have never experienced, and the main contributing factor is curiosity and imitating what adults do, including sexuality.
Aims: This study aimed to analyze the transmission prevention program of HIV and Syphilis for adolescents in North Sumatra.
Methods: This study used an analytic survey approach with a cross-sectional design by taking 729 people as a sample, selected using quota sampling, from the total adolescent population (19.4% of the population of North Sumatra). Questionnaires produced using an online platform and adapted from The Prospero Network. The results were then transferred into a statistics-based application for descriptive data analysis, bivariate, and multi-level tests.
Results: The study showed that >50% of the respondents took a quick, free laboratory test for HIV and syphilis and a reactive confirmation test through a health facility in both cases. Moreover, the results of multi-level statistical tests show models 1 and 2, namely the availability of syphilis screening referrals, have a 1-17 times higher risk of implementing HIV and syphilis programs in adolescents.
Conclusion: Everything is interrelated with the implementation of HIV and Syphilis transmission prevention programs in adolescents. However, there is still a significant chance that it will not work. Therefore, the government and the community must work together to implement this program properly and consistently.

Keywords: adolescents, health program, HIV, Syphilis

Abstrak

Latar Belakang: *Remaja cenderung ingin mencoba hal yang belum pernah dialaminya, faktor utama penyebabnya adalah rasa ingin tahu dan melakukan apa yang dilakukan orang dewasa termasuk seksualitas.*
Tujuan: *Tujuan dari penelitian ini ialah untuk menganalisis program pencegahan penularan HIV dan Sifilis pada remaja di Sumatera Utara.*
Metode: *Penelitian ini menggunakan pendekatan survei analitik dengan desain* cross sectional *dengan mengambil 729 orang sebagai sampel dari total populasi remaja (19,4% penduduk Sumatera Utara), diambil secara quota sampling. Kuesioner yang dibuat menggunakan platform online dan diadaptasi dari The Prospero Network. Hasilnya kemudian ditransfer ke aplikasi berbasis statistik untuk analisis data deskriptif, bivariat, dan uji multi-level.*
Hasil: *Penelitian menunjukkan bahwa >50% responden melakukan tes laboratorium cepat dan gratis untuk HIV dan sifilis serta tes konfirmasi reaktif melalui fasilitas kesehatan pada kedua kasus. Selain itu, hasil uji statistik multi-level menunjukkan model 1 dan 2 yaitu ketersediaan rujukan skrining sifilis memiliki risiko 1-17 kali lebih tinggi untuk melaksanakan program HIV dan sifilis pada remaja.*
Kesimpulan: *Semuanya saling terkait dengan pelaksanaan program pencegahan penularan HIV dan Sifilis pada remaja. Namun, masih ada resiko tinggi untuk tidak berhasil. Oleh karena itu, pemerintah dan masyarakat harus bekerja sama untuk implementasi program ini dengan baik dan konsisten.*

Kata kunci*:* HIV*, program kesehatan, remaja, Sifilis*

Indonesian Journal of Health Administration (*Jurnal Administrasi Kesehatan Indonesia*)
p-ISSN 2303-3592, e-ISSN 2540-9301, Volume 11 No.1 2023, DOI: 10.20473/jaki.v11i1.2023.120-130
Received: 2022-10-01, Revised: 2023-05-11, Accepted: 2023-06-16, Published: 2023-06-29.
Published by Universitas Airlangga in collaboration with *Perhimpunan Sarjana dan Profesional Kesehatan Masyarakat Indonesia (Persakmi)*.

How to cite :
Lubis, Y. H. and Susilawati, S. (2023) "Analysis of HIV And Syphilis Transmission Prevention Programs for Adolescents", *Indonesian Journal of Health Administration*, 11(1), pp. 120-130. doi: 10.20473/jaki.v11i1.2023.120-130.

Indonesian Journal of Health Administration
(Jurnal Administrasi Kesehatan Indonesia)
p-ISSN 2303-3592, e-ISSN 2540-9301
10.20473/jaki.v11i1.2023.120-130

Introduction

Venereal disease has long been known to occur in Indonesia. With the advancement of science, the term is no longer used and has been changed to Sexually Transmitted Disease (STD) (Purnama, Sriati and Maulana, 2020). The term STD has been changed to Sexually Transmitted Infection (STI) in order to reach asymptomatic sufferers since 1998. Sexually transmitted infections (STIs) are infections that are sexually transmitted between people during sexual intercourse (Asiah, Sitohang and Suza, 2020).

Currently, the productive age group, because free sex behavior among adolescents still often occurs in young men and young women, is trying to control and prevent STI's in general; in particular, the adolescent group is an age that is very vulnerable to STI transmission, where risky behavior can easily occur due to promiscuity and is exacerbated by the lack of information, especially about reproductive and sexual health, including STIs. As a result, deviant sexual behavior, such as sexual activity that approaches sexual intercourse, is quite high (Hasibuan, 2021). This can lead to several consequences, including infection with sexually transmitted diseases such as HIV/AIDS. (Parida, Indriani and Kartika, 2020).

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, some of whom had even gone to the extreme, namely, having an abortion. In Indonesia, approximately 4.5% of men and 0.7% of women aged 15–19 years reported having sexual relations before marriage. Among adolescents aged 15–19 years, the highest proportion of first-time encounters occurred between the ages of 15 and 17 years. Approximately 33.3% of girls and 34.5% of boys aged 15-19 years began dating at the age of 15. At this age, there is concern that they do not have the appropriate life skills, so they are at risk of unhealthy dating behavior, including having sex prior to marriage. (Sari, Darmana and Muhammad, 2018).

While it tends to fluctuate, data on HIV-AIDS cases in Indonesia continues to increase annually. As shown in the figure below, during the last 11 years, the number of HIV cases in Indonesia reached its peak in 2019, which was 50,282 cases (Aryani and Riyandry, 2022). The five provinces with the highest HIV cases were East Java, DKI Jakarta, West Java, Central Java, and Papua. In 2017, most HIV cases were also owned by these five provinces. The provinces with the highest number of AIDS cases are the center of Java, Papua, eastern Java, DKI Jakarta, and the Riau Islands. AIDS cases in Central Java represent approximately 22% of all cases in Indonesia. The highest number of HIV and AIDS cases in 2017-2019 remained unchanged, mostly on the island of Java (Kemenkes RI, 2020).

According to North Sumatra Provincial Health Office data, in 2019, the number of new HIV-positive cases was reported as 1,709 and occupied the 6th position out of 34 provinces in Indonesia, with the highest HIV-positive cases in adolescents, an increase compared to the number of new cases found in 2018 (1,498 cases). However, the number of AIDS cases has tended to fluctuate. The number of AIDS cases in 2019 was 788, a decrease compared to 2018, which was 881 (Dinkes Sumut, 2019). According to data from the WHO, more than 1 million people suffer from STDs, with the four most common types of disease including Chlamydiasis, Gonorrhea, Syphilis, and Trichomoniasis. (Simorangkir, 2022).

According to Indonesian Ministry of Health (2029) data reported from April to June 2019, the total number of PIMS cases diagnosed using a syndrome-based approach and laboratory examination for the high-risk group. Namely, high-risk couples (4,741), Female Sex Workers (3,660), MSM (3,600), Sex Worker Customers (1,274), ladyboys (399), injecting drug users (84), and Male Sex Workers. The number of cases of Urethra Body Duh (DTU) was reported to be as high as 1,968, and as many as 270 cases of genital ulcers/genital ulcers. DTU cases

Indonesian Journal of Health Administration
(Jurnal Administrasi Kesehatan Indonesia)
p-ISSN 2303-3592, e-ISSN 2540-9301
10.20473/jaki.v11i1.2023.120-130

reported decreased from the first quarter of 2019 (2,134 cases to 1,968 cases), and Genital Ulcers increased compared to those reported in the first quarter of 2019 (242 cases to 270 cases) (Indonesian Ministry of Health, 2019).

Syphilis is a sexually transmitted infection (STI) that remains a global issue. Many adults are also affected by this disease. Syphilis not only causes morbidity but also has the potential to cause death. Pregnant women with syphilis may transmit Congenital Syphilis, which may cause birth defects and death. (Lubis, Abdillah and Lubis, 2020). Based on the above background, researchers are interested in conducting a study that aims to analyze a program to prevent HIV and Syphilis transmission among adolescents in North Sumatra Province.

Method

This study employed an analytical survey approach with a *cross sectional*. The population of this study is still teenagers who are vulnerable to HIV and Syphilis infection and domiciled in North Sumatra Province. Geographically, North Sumatra Province is located in the northern part of Sumatra Island, which has the largest population in Indonesia, which is around 14.9 million people in 2021, and 19.4% are teenagers (15-24 years old). From the total population, the sample taken was 729 people, namely representatives of the adolescent population aged 13-25 years and currently studying at least junior high school to university and domiciled in Medan City and Percut Sei Tuan District which are still within the territory of North Sumatra Province was taken by non-random using quota sampling technique. The independent variables in this study were laboratory tests in the category of fast or slow, time, counseling results, referral requests for follow-up, and whether or not they were accompanied by referral requests by health workers. The dependent variable in this study was whether or not the prevention program of HIV and syphilis transmission in adolescents in North Sumatra Province. Respondents were interviewed using online questionnaires with several questions in the form of characteristics and indicators of HIV and Syphilis prevention programs adopted through instruments sourced from The Prospero Network (The Prospero Network, 2022). After the interview, the results were transferred to statistical software and went through several stages in the form of coding, cleaning, editing, and processing. After passing through that stage, the data were analyzed and descriptively used to obtain a summary of the statistical results and characteristics of the respondents. The statistical test applied in this study was the chi-square test to obtain the crude goods ratio value and multiple logistic regression tests to obtain the adjusted goods ratio value with a multi-level analysis model that had been adjusted in the first and second stages of analysis with a significance level at alpha in the overall analysis with a precision of 5% ($p<0.05$).

Result and Discussion

Demographic Characteristics

Results reported that more than 60% of the respondents were male, aged 13–18 years. Furthermore, it is known that half of the respondents' parents are married. However, only >20% of people are Batak Muslims, and their parents' last education is tertiary (Table 1).

Factors Associated with HIV and Syphilis Prevention Program

The results of the study showed that >50% of respondents had free HIV and laboratory tests, although with the same number, there were still differences in examinations in syphilis cases in patients through paid laboratories; the same difference also occurred in patients who carry out an HIV confirmation test directly to 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 relatively slow, the results of post-test counseling and are found to be HIV positive come out in a slow period of time, do not receive information related to syphilis treatment, were not willing to be referred for further testing for HIV and Syphilis in health

Indonesian Journal of Health Administration
(Jurnal Administrasi Kesehatan Indonesia)
p-ISSN 2303-3592, e-ISSN 2540-9301
10.20473/jaki.v11i1.2023.120-130

facilities and HIV-positive cases, and were willing to request a referral to a health facility for further examination (Table 1).

Meanwhile, <50% of people whose counseling results after the post-test and were found to be HIV negative came out in a slow period of time, took HIV reactive confirmation tests through direct examinations to health facilities, and were not accompanied by health workers before being referred for HIV and syphilis treatment to health facilities. and further reexamination was performed (Table 1).

The results of the study conducted by Ahmed, *et al*, namely based on test results in the stratified category of sex laboratory-based risk scores with lipids, the majority of the HIV population was classified at low risk (83%) with 12% at medium risk and 5% at high risk (Ahmed *et al.*, 2022).

In this study, the authors found that overall, the variables had a significant relationship (p<0.05) or a sig precision of 5% with risks ranging from 1.1 times to 160.7 times. However, the statistical results showed that there were several variables that were not significant, namely, the time required for HIV examination visits in the slow period, the test results that were positive for HIV in the late category, unwilling 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 2).

This finding is related to the results of a study by Nabakwe *et al*. According to them, 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. A guide from the United Nations. The average score for nutritional counseling was 23,7% (range 6•7–40), which was low. Quantitative data indicated that a small proportion of 22-year-old mothers (4,1%) received counseling at PMTCT clinics. (Nabakwe, Egesah and Kiverenge-Ettyang, 2022).

Table 1. Characteristics of Respondents and Implementation of HIV and Syphilis Prevention (n=729)

Variable	Frequency (%)
Gender	
Male	485 (66.5)
Female	244 (33.5)
Age	
13-18 years	641 (87.9)
19-25 years	88 (12.1)
Ethnic	
Aceh	125 (16,5)
Batak	192 (30.7)
Buton	163 (20,3)
Javanese	130 (18.8)
Malay	119 (13.7)
Parents	
Married	373 (51.2)
Divorced	356 (48.8)
Parents' education level	
Elementary	184 (25.2)
Junior	167 (22.9)
High School/ Vocational	178 (24.4)
Bachelor/Master/ Doctoral	200 (27.5)

Indonesian Journal of Health Administration
(Jurnal Administrasi Kesehatan Indonesia)
p-ISSN 2303-3592, e-ISSN 2540-9301
10.20473/jaki.v11i1.2023.120-130

Variable	Frequency (%)
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)
Laboratory HIV test	
Free	428 (58,7)
Paid	301 (41,3)
Time required for HIV screening visits	
Fast	334 (45,8)
Slow	395 (54,2)
Post-test counseling Results are negative HIV	
Fast	394 (54,0)
Slow	335 (46,0)
Post-test counseling results declared HIV positive	
Fast	279 (38,3)
Slow	450 (61,7)
Conducting HIV reactive confirmation test	
Direct	190 (26,1)
Indirect	539 (73,9)
Requesting referral for HIV screening at health facilities	
Yes	112 (15,4)
No	617 (84,6)
Received information related to HIV care	
Yes	127 (17,4)
No	602 (82,6)
Accompanied to facilities health prior to referral for HIV treatment	
Yes	365 (50,1)
No	364 (49,9)
Laboratory syphillis test	
Free	276 (37,9)
Paid	453 (62,1)
Willing for referral for syphilis examination at health facilities	
Yes	308 (42,2)
No	421 (57,8)
Receiving information related to syphilis treatment	
Yes	269 (36,9)
No	460 (63,1)
Accompanied by healthcare professional before referral to a health facility to get-further treatment	
Yes	379 (52,0)
No	350 (48,0)

Indonesian Journal of Health Administration
(Jurnal Administrasi Kesehatan Indonesia)
p-ISSN 2303-3592, e-ISSN 2540-9301
10.20473/jaki.v11i1.2023.120-130

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

Variables	HIV and Syphilis Prevention Program (%)		COR (95% CI)**	P-Value
	Implemented	Not Implemented		
Laboratory HIV test				0.036*
Free	226 (60.4)	148 (39.6)	1.15	
Paid	202 (56,9)	153 (43,1)	(0.86-1.55)	
Time required for HIV screening visits				0.001*
Fast	188 (53,0)	167 (47,0)	0, 56	
Slow	146 (39.0)	228 (61.0)	(0.42-0.76)	
Post-test counseling Results are negative HIV				0.001
Fast	164 (46,2)	191 (53,8)	1.86	
Slow	230 (61.5)	144 (38.5)	(1.38-2.49)	
Post-test counseling results declared HIV positive				0.001
Fast	108 (28.9)	266 (71.1)	0.43	
Slow	171 (48,2)	184 (51,8)	(0.32-0.59)	
Conducting HIV reactive confirmation test				0.001*
Direct	145 (38.8)	229 (61.2)	4.36	
Indirect	45 (12,7)	310 (87,3)	(2.99-6.35)	
Requesting referral for HIV screening at health facilities				0.001
Yes	100 (28,2)	255 (71,8)	0.85	
No	12 (3.2)	362 (96.8)	(0.04-0,15)	
Received information related to HIV care				0.001
Yes	27 (7.2)	347 (92.8)	0.19	
No	100 (28,2)	255 (71,2)	(0.12-0.31)	
Accompanied to facilities health prior to referral for HIV treatment				0.001
Yes	7 (2,0)	348 (98,0)	112.35	
No	358 (95.7)	16 (4.3)	(45.20-273.69)	
Laboratory syphilis test				0.001
Free	274 (50,3)	271 (49,7)	0.11	
Paid	2 (1.1)	182 (98.9)	(0.03-0.44)	
Willing for referral for syphilis examination at health facilities				0.001*
Yes	302 (55,4)	243 (44,6)	0.27	
No	6 (3.3)	178 (96.7)	(0.12- 0.62)	
Receiving information related to syphilis treatment				0.001
Yes	264 (48,4)	281 (51,6)	0.30	
No	5 (2.7)	179 (97.3)	(0.12-0.73)	

Indonesian Journal of Health Administration
(Jurnal Administrasi Kesehatan Indonesia)
p-ISSN 2303-3592, e-ISSN 2540-9301
10.20473/jaki.v11i1.2023.120-130

Variables	HIV and Syphilis Prevention Program (%)		COR (95% CI)**	P-Value
	Implemented	Not Implemented		
Accompanied by healthcare professional before referral to a health facility to get-further treatment				0.001*
Yes	197 (36,1)	348 (63,9)	160.75	
No	182 (98.9)	2 (1,1)	(39.46-654.76)	

**Crude Oods Ratio*
**Precision 5% Significant*

Table 3. Multivariate Analysis of Multi-Level Model Against Factors Associated with HIV and Syphilis Transmission Prevention Programs for Adolescents (n=729)

Variable	Model 1		Model 2	
	AOR	95%CI	AOR	95%CI
Laboratory HIV test				
Free	3,11	1,28-7,57	0,63	0,42-0,94
Paid	Ref	Ref	Ref	Ref
Time required for HIV screening visits				
Fast	Ref	Ref	Ref	Ref
Slow	0,14	0,04-0,47	0,98	0,71-1,35
Conducting HIV reactive confirmation				
Direct	0,67	0,19-0,23	0,73	0,46-1,17
Indirect	Ref	Ref	Ref	Ref
Availability of syphilis screening referrals at health facilities				
Yes	Ref	Ref	Ref	Ref
No	17,36	28,7-108,0	1,81	1,05-3,14
Accompanied by health workers before being referred to health facilities For Further Treatment				
Yes	Ref	Ref	Ref	Ref
No	4,61	1,81-11,71	1,67	0,94-2,96
Random Variance				
Log-likelihood	149,212		921,806	
Intraclass correlation	0,892		0,014	

adjusted oods ratio
precision 5% significant (<0,05)

Based on multi-level statistical tests, it is known that the time required for HIV screening visits has a significant influence on the implementation of HIV and Syphilis transmission prevention programs in adolescents from all variables analyzed. In Model 2, the availability of syphilis screening referrals at health facilities can have a significant influence on the implementation of HIV and syphilis prevention programs in adolescents, and most dominantly have a 1-17 times greater risk of HIV, and syphilis prevention programs cannot be implemented. Accompanied by health workers before being referred to health facilities For Further Treatment also has a major influence on the implementation of HIV and Syphilis transmission prevention programs in adolescents after the availability of syphilis screening with a 1-4 times higher risk of affecting the implementation of HIV

Indonesian Journal of Health Administration
(Jurnal Administrasi Kesehatan Indonesia)
p-ISSN 2303-3592, e-ISSN 2540-9301
10.20473/jaki.v11i1.2023.120-130

and Syphilis prevention programs for adolescents. The category of not conducting screening and not being accompanied by health workers binds 14% of the results of the existing multi-level analysis so that the contribution made by intervening risk factors at the level of HIV and Syphilis screening and mentoring health workers will encourage the implementation of HIV and Syphilis transmission prevention programs in adolescents by 14% (Table 3).

According to the results of research conducted by Kinnman *et al*. Among all respondents, 436 (65.8%) reported an interest in using HIVST, and among those who were interested, 205 (47.0%) expressed willingness to pay for HIVST. Rectal Chlamydia, Rectal Gonorrhea, or Syphilis during the previous 12 months were reported by 81 respondents (12.3%). In addition, 44 respondents (6.7%) reported that they had never been tested for HIV before, and 33 (5.0%) reported using self-sampling kits for Chlamydia and Gonorrhea. Being single was negatively associated with willingness to pay (AOR 0.56, CI 0.36-0.88) (Kinnman *et al.*, 2022).

According to Unicef in the Guidelines for the Management of the Program for the Prevention of maternal-child transmission of HIV and Syphilis, namely the PPIA Program policies and strategies basically refer to the National Health System, policies of the National Program for Control of HIV-AIDS and Sexually Transmitted Infections, Program policies Maternal Health and other related national policies. PPIA is part of the National Program for Control of HIV-AIDS and STIs and efforts for maternal and child health; Implementation of PPIA activities is integrated into MCH services, Family Planning (KB), and Adolescent Counseling at every level of health services with gradual expansion and involving the role of non-governmental organizations, NGOs and communities, and sexually transmitted infections (STIs) are a public health problem that poses a burden of morbidity and even mortality in developing countries. The prevention and treatment of STIs can reduce the risk of HIV transmission through sexual intercourse. The presence of STIs in the form of inflammation or ulceration increases 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 HIV (Unicef, 2019).

A 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, and the Internet, many young people still lack information about STIs. Unlike the high prevalence of HPV in Germany and the rest of the world, adolescents had the lowest level of awareness of the STIs evaluated. Information gaps and lack of knowledge are reflected in this study and underscore the need for intensive and thorough educational work. (Rummel *et al.*, 2022).

Other research conducted by Nurjanah and Wahyono using a systematic study found that challenges that can be overcome occur in patients, including a lack of information about prevention programs for mother-to-child transmission of HIV from purpose, benefits, side effects, and in-depth information about ART, other than partner and family involvement, have an influence on the running of the PMTCT program, including participation in the treatment process, such as the activity of checking the amount of *viral load* and commitment to accompanying treatment. Patient engagement in ART is also a challenge because it lasts for a lifetime. In addition, the patient's reluctance to reveal their HIV status also becomes a challenge in implementing PMTCT; other challenges in running the PMTCT program that occurs in health workers (health workers, health cadres) include unbalanced workload with wages that can be obtained. In addition, there are difficulties in ensuring the right PMTCT service for patients, and ensuring patient engagement in therapy by removing community-related stigma, and the availability of drugs and HIV testing kits is also a challenge in the implementation agenda. In the absence of medication or

Indonesian Journal of Health Administration
(Jurnal Administrasi Kesehatan Indonesia)
p-ISSN 2303-3592, e-ISSN 2540-9301
10.20473/jaki.v11i1.2023.120-130

the patient's test package, faith was lost in the programme. (Nurjanah and Wahyono, 2019).

The weakness of this study is the limitation of very minimal funding from researchers and the long time taken to obtain respondents who are in many categories. This study can be generalized because the problem of HIV and Syphilis in adolescents is still a global problem because there are still many adolescents who practice free sex and prevention programs for HIV and Syphilis in adolescents must still be implemented so that HIV problems do not spread and can become endemic and even become a pandemic in the future.

Conclusion

This study concludes that HIV testing through the laboratory is fast and free, there is no willingness to do referrals, and is not accompanied by health workers when making referrals related to each other with the implementation of the HIV and Syphilis transmission prevention programs for adolescents in North Sumatra Province. However, there remains a high risk of not running the program. Therefore, the government, especially program makers, must always evaluate every activity to carry out this and involve human resources and the community in program implementation.

Abbreviations

WHO: World Health Organization; UNICEF: United Nations International Children's Emergency Fund; SD: standard deviation; AOR: adjusted odds ratio; COR: crude odds ratio; PHC: primary health care; HIV: human immunomodulator virus; STIs: sexually transmitted infections.

Ethics Approval and Consent Participant

This study was approved by the Research Ethics Committee of the Faculty of Medicine of the Islamic University of North Sumatra. (No. 330/ EC. UISU/ XII/ 2022. Respondents were informed of the goals and objectives of the study, and provided oral consent to participate in the study.

Conflict of Interest

The authors state that there are no significant competing financial, professional, or personal interests that might have influenced the study.

Availability of Data and Materials

The data and materials for this study can be made available to the journal upon request.

Authors' Contribution

YHL and SS conceptualized the study; YHL created the methodology; YHL and SS wrote, reviewed, and edited the manuscript; and SS wrote the original draft.

Funding Source

None.

Acknowledgment

We would like to thank the Faculty of Public Health, North Sumatra State Islamic University, Faculty of Medicine, Islamic University of North Sumatra, and Universitas Airlangga for their support and contributions to this study.

References

Ahmed, H.A. *et al.* (2022) 'Cardiovascular risk factors and markers of myocardial injury and inflammation in people living with HIV in Nairobi, Kenya: a pilot cross-sectional study', *BMJ Open*, 12(6), pp. 1–11. Available at: https://doi.org/10.1136/bmjopen-2022-062352.

Aryani, L.D. and Riyandry, M.A. (2022) 'Analisis Faktor Yang Berhubungan Dengan Kejadian HIV/AIDS Pada Wanita', *Jurnal Penelitian Perawat Profesional*, 4(2), pp. 61–70.

Asiah, N., Sitohang, N.A. and Suza, D.E. (2020) 'Pengetahuan Remaja Anak Jalanan Tentang Bahaya Seks Bebas dan Penyakit Menular Seksual di Komunitas Peduli Anak Kelurahan Medan Maimun', *Jurnal Riset Hesti Medan Akper Kesdam I/BB Medan*, 5(2), pp. 170–170. Available at: https://doi.org/10.34008/jurhesti.v5i2.209.

Indonesian Journal of Health Administration
(Jurnal Administrasi Kesehatan Indonesia)
p-ISSN 2303-3592, e-ISSN 2540-9301
10.20473/jaki.v11i1.2023.120-130

Dinkes Sumut (2019) *Profil Kesehatan Provinsi Sumatera Utara Tahun 2019*.

Hasibuan, A.S. (2021) *Pandangan MUI Kota Medan Tentang Perlindungan Anak Terinfeksi HIV/AIDS (Studi Kasus Lembaga Medan Plus)*, *Universitas Islam Negeri Sumatera Utara*.

Indonesian Ministry of Health (2019) *Laporan Perkembangan HIV AIDS & Penyakit Infeksi Menular Seksual (PIMS) Triwulan II Tahun 2019*, pp. 138–139.

Kemenkes RI (2020) 'Infodatin HIV AIDS', *Kementerian Kesehatan Republik Indonesia*, pp. 1–8.

Kinnman, E. *et al.* (2022) 'HIV self-testing for men who have sex with men in Sweden. A cross-sectional study concerning interest to use HIV self-tests', *Global Health Action*, 15(1). Available at: https://doi.org/10.1080/16549716.2021.2021631.

Lubis, L., Abdillah, A. and Lubis, H.K. (2020) 'The Influenced Factors On The Syphilis Disease Infection Matter On The Man Productive Age In The Teladan Public Health Center Medan Period Of January-September 2019', *International Journal on Language, Research and Education Studies*, 4(2), pp. 209–222. Available at: https://doi.org/10.30575/2017/IJLRES-2020050804.

Nabakwe, E.C., Egesah, O. and Kiverenge-Ettyang, G.A. (2022) 'Maternal and health care workers' perspectives on exclusive breastfeeding in the context of maternal HIV infection, in Busia county, western Kenya: a mixed methods cross-sectional survey', *International Breastfeeding Journal*, 17(1), pp. 1–13. Available at: https://doi.org/10.1186/s13006-022-00454-z.

Nurjanah, N.A.L. and Wahyono, T.Y.M. (2019) 'Tantangan Pelaksanaan Program Prevention Of Mother To Child Transmission (PMTCT): Systematic Review', *Jurnal Kesehatan Vokasional*, 4(1), pp. 55–55. Available at: https://doi.org/10.22146/jkesvo.41998.

Parida, D., Indriani, I. and Kartika, S. (2020) 'Analisis Faktor Yang Berhubungan Dengan Perilaku Pencegahan Ims Pada Kelompok Usia Produktif 15-24 Tahun Di Wilayah Kerja Puskesmas Menteng Palangka Raya', *Dinamika Kesehatan: Jurnal Kebidanan Dan Keperawatan*, 11(1), pp. 49–60. Available at: https://doi.org/10.33859/dksm.v11i1.612.

Purnama, L.C., Sriati, A. and Maulana, I. (2020) 'Gambaran perilaku seksual pada remaja', *Holistik Jurnal Kesehatan*, 14(2), pp. 301–309. Available at: https://doi.org/10.33024/hjk.v14i2.2761.

Rummel, M. *et al.* (2022) 'Evaluation of the knowledge of students concerning sexually transmitted infections in Bavaria/Germany (a cross-sectional study)', *JDDG - Journal of the German Society of Dermatology*, 20(2), pp. 169–176. Available at: https://doi.org/10.1111/ddg.14653.

Sari, D.N., Darmana, A. and Muhammad, I. (2018) 'Pengaruh Faktor Predisposisi, Pemungkin, dan Pendorong Terhadap Perilaku Seksual di SMA Asuhan Daya Medan', *Jurnal Kesehatan Global*, 1(2), pp. 53–53. Available at: https://doi.org/10.33085/jkg.v1i2.3943.

Simorangkir, S.J.V. (2022) 'Penyuluhan Cara Mengenali Tanda dan Gejala Penyakit Menular Seksual Serta Pencegahannya Kepada Para Pelajar Di SMAN 1 Silima Pungga Pungga', *Jurnal Ilmiah Pengabdian Kepada Masyarakat*, 3(1), pp. 62–73. Available at: https://doi.org/10.51622/pengabdian.v3i1.376.

Indonesian Journal of Health Administration
(Jurnal Administrasi Kesehatan Indonesia)
p-ISSN 2303-3592, e-ISSN 2540-9301
10.20473/jaki.v11i1.2023.120-130

The Prospero Network (2022) 'Standardised protocol for a prospective cross-sectional multicentre clinical utility evaluation of two dual point-of-care tests in non-clinical settings for the screening of HIV and syphilis in men who have sex with men', *BMJ Open*, 12(6), p. e055275. Available at: https://doi.org/10.1136/bmjopen-2021-055275.

Unicef (2019) *Pedoman Manajemen Program Pencegahan Penularan HIV dan Sifilis dari Ibu ke Anak*, *Kementerian Kesehatan Republik Indonesia*, p. 27.