
Implementation of Oral Pre-Exposure Prophylaxis (PrEP) Services (Qualitative Study of Public Health Centers in Semarang City)

Rizka Nur Isaeni*, Aditya Kusumawati, Novia Handayani
Faculty of Public Health, Universitas Diponegoro, Semarang, Indonesia

ARTICLE INFO

Article history

Received date
12 Feb 2024

Revised date
13 Aug 2024

Accepted date
26 Aug 2024

Keywords:

HIV prevention;
Health worker practice;
PrEP program.

ABSTRACT

The trial implementation of the PrEP program as an HIV prevention program in Semarang City has not run optimally. Health workers with an essential role as program implementers still experience technical and technical obstacles in recording and reporting, which are quite complicated. It is necessary for a program that has been running for almost 3 years to carry out more in-depth studies, especially for health workers who play a direct role in providing PrEP services. Data collection was descriptive and qualitative, using in-depth interviews. The study subjects consisted of nine primary informants and four triangulated informants using purposive sampling. Data validity is carried out by triangulating data sources. Data reliability is measured by data audit and data analysis using the content analysis method. The study results show that health workers' implementation of the PrEP program differs from the management guidelines published by the Ministry of Health of the Republic of Indonesia in 2023. Most health workers have a low level of knowledge regarding the PrEP program and perceive that the PrEP program supports LGBT and free sex. As a result, intrapersonal conflict arises because it is considered to conflict with one's thought patterns and conscience. The conclusion is that the low level of knowledge among the majority of PrEP program implementers significantly influences the PrEP program's success. Therefore, there is a need for regular, more comprehensive training related to the PrEP program.

Corresponding author:

Rizka Nur Isaeni

Faculty of Public Health, Universitas Diponegoro, Semarang, Indonesia
Email: rizkanurisaeni3@gmail.com

INTRODUCTION

Human Immunodeficiency Virus (HIV) cases are still a global health problem. Based on UNAIDS data, it is stated that in 2020, there were 1.5 million new people infected with HIV, 37.7 million people living with HIV, and 680 thousand people dying from AIDS (UNAIDS, 2021). There are 377,650 HIV cases and 145,037 AIDS cases occurring in Indonesia as of March 2023. Based on cumulative cases from 2010 to 2022, Central Java Province is ranked 4th on the national scale, with a total of 50,689 HIV cases (Ministry of Health RI, 2023).

In the area of Central Java Province, Semarang City has relatively high cases of HIV/AIDS, with the number of cases reaching 508 cases in 2022. This number is higher than in 2021, which amounted to 231 cases (Health Office of Semarang., 2022). This is because Semarang City is the provincial capital and transit city with a high level of mobility, and a large number of residents from outside Semarang

City who have been infected with HIV enter Semarang City so that the spread and transmission of HIV becomes easier. Other causal factors include risky behavior in key populations, such as Men Who Have Sex with Men, Female Sex Workers, Commercial Sex Workers, Injecting Drug Users, and serodiscordant. Apart from that, there are many dangerous places such as the Sunan Kuning localization, nightclubs, massage parlors, urban settlements, and Bandungan. On the other hand, the knowledge of the people of Semarang City about the concept of preventing, transmitting, and controlling HIV/AIDS is also still low (Adilina et al., 2021).

The spread of HIV cases in Indonesia currently does not only occur in high-risk populations, but all levels of society have the same risk of HIV transmission (Aryani & Pramitasari, 2018). Indonesia has carried out various HIV prevention efforts to end the HIV epidemic by 2030, known as three zero with zero new infections as one of its main pillars (Ministry

of Health RI, 2022a). One of the government's innovations in preventing HIV transmission is implementing the Pre-Exposure Prophylaxis (PrEP) program (Ministry of Health RI, 2023). It has been recorded that 63 countries are using PrEP (Amtiyaz, 2019).

The PrEP program began trials in Indonesia in 2021. This program has received support from the government, as evidenced by the issuance of Minister of Health Regulation Number 23 of 2022. This regulation states that HIV prevention can be done by providing PrEP (Ministry of Health RI, 2022b). The PrEP program trial in Indonesia has only been carried out in several large cities, including Semarang City. There are 4 health centers in Semarang City that are the locations for testing the PrEP program, including the Halmahera Health Center, Kedungmundu Health Center, Poncol Health Center, and Lebdosari Health Center (Yayasan Kasih Suwitno, 2024). One of the successes of a program is the presence of adequate and competent health workers so that the program can run optimally (Rensi, 2019).

The results of the preliminary study show that the majority of health workers who implement the PrEP program in Semarang City disagree because they think that the program is like supporting people to have free sex. As a result, the orientation of the practice is only to implement the program as assigned by the superior. As a new program, of course, there are still several obstacles faced by health workers, including the Ask Marlo system, which cannot be accessed, registration still needs to be done manually, and recording and reporting is quite complicated. In addition, most health workers need help understanding the PrEP program correctly and comprehensively (Health Office of Semarang, 2023). Several problems that occur among health workers can certainly affect their performance or practice in providing PrEP services. Based on this description, it is not yet transparent about the implementation of HIV prevention efforts, especially the PrEP program, when viewed from the behavior of health workers as program implementers. Therefore, based on the urgency of the problem, researchers were interested in conducting a more in-depth analysis regarding the practices of health workers in implementing the Pre-Exposure Prophylaxis (PrEP) program in Semarang City. This study focuses on implementing the PrEP program at public health centers X and Y.

METHOD

The study design used is qualitative with a case study approach. The study subjects were 13 informants consisting of 9 primary informants and 4 triangulation informants who were selected using purposive sampling. The primary informants in this study were health workers who were directly involved in the PrEP program at Public Health Center X and Public Health Center Y, Semarang City. They consisted of doctors, nurses, laboratory staff, pharmacy staff, and HIV AIDS program holders. Meanwhile, the triangulation informant participated in the PrEP program at Public Health Center X and Public Health Center Y, Semarang City, from the program implementation until the study. Based on these inclusion criteria, the head of the public health center and one of the PrEP users at the two public health centers were selected as triangulation informants.

Data collection techniques were done through in-depth interviews using interview guides, writing tools, and recording equipment. Data analysis uses the content analysis method. Data validity is carried out by triangulating data sources. In this study, two data sources are used: information sources through informant triangulation and data sources through document study. The documents used are the Decree of the PrEP Team from the Public Health Center. Ethical clearance was obtained from the Health Study Ethics Commission, Faculty of Public Health, Diponegoro University, number 431/EA/KEPK-FKM/2023.

RESULTS

Table 1. Characteristics of the main informants

Public Health Center X			
I	Age	M/F	Status
A1	35	F	Doctor
A2	36	F	Nurse
A3	43	F	Laboran
A4	31	F	Pharmacy
A5	43	F	Program Holder
Public Health Center Y			
I	Age	M/F	Status
B1	33	F	Doctor
B2	39	F	Nurse and program holder
B3	30	F	Laboran
B4	37	F	Pharmacy

Table 2. Characteristics of triangulation informants

Public Health Center X			
I	Age	M/F	Status
A6	53	F	Head of Health Center
A7	22	M	PrEP User
Public Health Center Y			
SP	Age	Sex	Status
B5	46	M	Head of the Health Center
B6	37	F	PrEP User

Based on the study that has been carried out, it is known that informants' practices in implementing the PrEP program are only partially to the technical instructions for administering the PrEP program issued by the Ministry of Health RI in 2023. Some informants do not carry out all the tasks listed in these guidelines, as stated by the main informant below:

".....regarding the screening, it was not carried out by me because I only confirmed it after he filled out the online form." (A1).

"Just do an interview... Then later on, the most risky counseling will be carried out. That is all I know..." (A2).

Researchers also found that some health workers still did not understand the PrEP program because they felt it had not been properly socialized. As a result, some health workers have a negative perception of the PrEP program.

"Sometimes I do not understand and am confused about implementing this PrEP program..." (A2)

".....in fact, we seem to support LGBT, don't we? How come rich people like that are even facilitated....." (B2).

The statement above shows that the informant is still trying to carry out his duties in providing PrEP services because of demands from the government. However, there has been no stigma towards prospective PrEP users who are an HIV risk group.

"I am used to it because here I see them every day...." (A3, B2)

"If you are afraid, sis, if you just shake hands, it is not contagious, right?" (A1, A2, A4, A5, B2, B4)

Since the PrEP program was implemented, most informants showed a less supportive attitude due to the emergence of intrapersonal conflicts. This conflict occurred because of conflicting beliefs and consciences that did not allow the implementation of the PrEP program in Semarang City.

".....on the other hand, it is like making it legal for someone to have sexual relations because the prevention exists. "Personally, I do not agree because I am a health worker; like it or not, I have to agree." (A5).

"....from a health perspective, it is essential...but actually, it is against my conscience because I am educating patients who are doing something that is not following the teachings of the Islamic religion." (B1).

Meanwhile, several other informants showed an attitude that supported the PrEP program because it was based on the aim of helping at-risk groups in efforts to prevent HIV transmission.

"...To be honest, I carry out this task because I want to help them." (B1, B2, A3).

During the implementation of the PrEP program, the obstacles encountered by informants were only related to logistics, not technical ones. One such obstacle was the availability of PrEP drugs and reagents, which were often out of stock. This is because the distribution process from the Ministry of Health takes quite a long time to reach the Public health center.

"...At first it was going smoothly, but lately we have run out of HBsAg, HCV, PrEP drugs are also starting to run out..." (B2)

"...If the obstacles are more related to drug supplies, there could even be shortages..." (A4).

Although information regarding PrEP service procedures is widely available, not all informants are highly motivated to study it thoroughly.

".....the technical guidelines from the ministry have not been sent, but maybe they have been piled up with other friends because there are many programs, so my friends only skim through the details, and we do not have enough time to gather, so that is only during the OJT." just....." (A5).

In implementing the program, health workers receive positive support from various parties, including support from the head of the public health center, other health workers as colleagues, and the PrEP outreach community.

DISCUSSION

Health worker practices in implementing the PrEP program

The study results show that the practices of informants in implementing the PrEP program are only partially to the technical instructions for

administering the PrEP program issued by the Indonesian Ministry of Health RI in 2023. Some informants still need to carry out all their duties as stated in these guidelines. This is because the practices carried out by the informants follow the job descriptions stated in the PrEP team Decree (SK) issued by their respective public health centers. After researchers conducted a document study through the decree, the results showed slight differences in the job descriptions that health workers must carry out. Several tasks listed in the Ministry of Health's technical instructions were not fully included in the decree on the PrEP program at the health center. Therefore, even though the practices carried out by informants are by the SK and have been implemented well, not all tasks listed in the Ministry of Health guidelines are carried out by health workers.

Another factor that caused the informant's practice to be less than optimal was poor knowledge due to a lack of motivation to learn more about the PrEP program. Apart from that, there is an opinion that the PrEP program is quite complicated to understand, and there are many health programs that the main informant must implement, so the informant feels that he only needs to understand the information that is his job in implementing the PrEP program. This shows that the spirit of professionalism has yet to be fully embedded in health workers because one of the characteristics of professional health workers is that they have high skills based on theoretical and systematic knowledge. (Damayanti & Santosa, 2022).

Health worker's knowledge regarding the PrEP program

The PrEP program is an HIV prevention program through the use of ARVs by someone who is not yet infected with HIV (Ministry of Health of the Republic of Indonesia, 2023). As part of a comprehensive prevention strategy for HIV infection, the use of PrEP needs to be accompanied by safe sex practices, routine HIV testing, HIV risk reduction counseling, and consistent condom use (Mahariski et al., 2023).

The study results showed that most primary informants needed better knowledge of the PrEP program. Only physicians and program holders know information regarding the PrEP program. The following is a discussion regarding health workers' knowledge of the PrEP program:

a. Procedures for using PrEP

The informant stated that the rules for using PrEP drugs consist of daily doses and non-

daily doses or another term called Event-Driven (ED). The daily dose explained by the informant is two tablets consumed in the first stage and then one tablet every day as long as you still feel at risk. Meanwhile, the ED dose is given in doses of 2, 1, 1, which means 2 or 72 hours before sexual intercourse, consuming two tablets, one day after consuming one tablet, and so on consuming one tablet. The explanations from the two informants were by the technical instructions for administering the Ministry of Health's PrEP program in 2023 (Mahariski et al., 2023).

b. PrEP service flow

Almost all informants knew the flow of PrEP services, but the program holders at the two public health centers knew the most detail and sequence. Meanwhile, other health workers only know the general outline, namely registering at the registration counter, screening, laboratory tests, physical examination, and getting medicine. In detail, the PrEP program flow is as follows:

1. Fill in the registration link.
2. Carry out examinations and counseling at the General Medical Center (BP).
3. Carry out laboratory tests, which include HIV, syphilis, HBsAg, and HCV tests. A person can access PrEP only when an HIV test is negative.
4. Go to General BP again to get information regarding laboratory results from the doctor as well as physical examination and counseling.
5. Take PrEP medication at the pharmacy if you have received a doctor's approval to use PrEP.
6. Make repeat visits in the first and third months, then repeat visits every three months regularly.

c. Eligibility requirements for someone to start using PrEP

Most informants did not explain the eligibility requirements for someone to start accessing PrEP. Some of the conditions mentioned by the informant were only someone who had a negative HIV status. The eligibility requirements for someone to access PrEP, as stated in the Indonesian Ministry of Health's PrEP guidelines, include:

1. Have a negative HIV status
2. There is no indication of having an acute infection

3. Have a high risk of HIV infection (substantial risk)
4. Indonesian citizen
5. There are no contraindications to the PrEP regimen (TDF/FTC)

The targets for PrEP are MSM, FSW, transgender, IDUs, PLHIV couples, and high HIV-risk couples (Mahariski et al., 2023).

d. Side effects of PrEP drugs

Only a few informants have received direct reports regarding the side effects of PrEP drugs, such as nausea, vomiting, and dizziness. This is by research conducted by Tetteh et al. in 2017, which stated that the main side effect of using PrEP was causing digestive (gastrointestinal) diseases. Common side effects include nausea, vomiting, and mild to moderate diarrhea (Tetteh et al., 2017). A study by Chou et al. in 2019 also showed that the side effects of using PrEP could increase the risk of kidney and gastrointestinal diseases. Most of the side effects experienced by PrEP users are mild and reversible (Chou et al., 2019).

Regarding PrEP consumption, most informants said that non-compliance with consuming PrEP medication could cause resistance in the body. The potential for PrEP drug resistance can occur, but the occurrence is infrequent (Gibas et al., 2019). The risk of developing resistance occurs in approximately 1/1,000 PrEP users who have undetected acute HIV infection (IHA) when starting PrEP. This shows that PrEP resistance in the body is uncommon (Ministry of Health RI, 2023).

The main difference in health workers' knowledge is due to differences in training received by health workers implementing the PrEP program. Health workers who often receive direct training from the Ministry of Health or the Health Office tend to have better knowledge than those who only receive information through on-the-job training (OJT). The implementation of OJT coincided with a mini health center workshop with open presentation and discussion techniques, so time to convey PrEP information needed to be improved. This aligns with a study in Uganda, which showed increased HIV PrEP knowledge following a training intervention (Muwonge et al., 2020).

Health workers perceptions regarding the PrEP program

The study results show that there is still an opinion among health workers that the PrEP program supports LGBT and legalizes free sex. The emergence of this perception is due to inconsistencies and conflicts with conscience, worldview, and even beliefs in the religion one adheres to. It cannot be denied that the PrEP program is stigmatized because it facilitates behavior that is socially unacceptable to most of society (Golub, 2018). As a result, the practices carried out are only based on demands from the government, and innovation to intensify the program tends to be low. However, researchers have not found any stigma from health workers when dealing directly with prospective PrEP users, who, in this case, are an HIV risk group. All key informants already know how HIV is transmitted well and are used to interacting in providing health services to groups at risk of HIV.

Attitudes demonstrated by health workers in providing PrEP services

Several informants were less supportive of the PrEP program due to intrapersonal conflicts. Some other health workers support the implementation of the PrEP program to help at-risk groups not to contract HIV. A good attitude shown by health workers is essential to reduce patients' stigma (Dapaah, 2016). Even though some health workers provide a supportive attitude toward the PrEP program, this will still affect the optimality of the program because not all health workers have the same attitude toward implementing the PrEP program (Mahlare et al., 2023).

Availability of facilities in the form of PrEP program facilities and infrastructure

Facilities and infrastructure at Public Health Center: The need for more drugs and test kits and the lack of support for service providers reduce motivation for service providers and service users (Afriana et al., 2022). Even though PrEP drugs and reagents are often out of stock, health officials have tried to request procurement of these drugs and reagents from the government before the drugs and reagents are out of stock. This study found that the factor causing PrEP drugs and reagents to often be out of stock was that the drugs were only obtained from Thailand,

so it took quite a long time to arrive at the health center.

Availability of information regarding PrEP service procedures

Most of the information was obtained by informants from program holders after receiving training from the Ministry of Health and the Health Office. This information is in PowerPoint, program management guidelines, and other materials. Various information related to the PrEP program was shared via the WhatsApp application, and follow-up was carried out through OJT activities during the mini health center workshop. However, the time was limited, so not all information could be adequately conveyed. Access to information is closely related to a person's knowledge. This is because good access to information will increase a person's knowledge, while knowledge is essential in shaping behavior (Fitria et al., 2023).

Attitudes and behavior of the head of the public health center toward health workers implementing the PrEP program

Some forms of support provided by the head of the public health center include work dispensation to attend PrEP training, making a Decision Letter for the PrEP team, and support related to the procurement of goods or facilities to support the program, such as the provision of a particular counseling room or a special education room for PrEP patients.

Support from leadership is essential in implementing the PrEP program. One of the critical duties of a leader is to carry out supervision, but the head of the public health center needs to carry out supervision activities. From the study results, the researchers learned that Public Health Center X and Y heads had yet to support the program's complete optimal running. This is because the head of the public health center rarely carries out supervision, and the HIV AIDS program holder more often carries out the implementation of supervision. The head of the public health center will only receive reports from HIV/AIDS program holders regarding obstacles or problems. It will conduct supervision only when there is a visit from the Semarang City Health Service.

Attitudes and behavior of other health workers as colleagues

The study results showed positive support from other health workers when one of the health workers experienced problems during practice or when there were official duties outside the health center. The existence of a good spirit of cooperation and solidarity from every health worker who implements the PrEP program at Public Health Center X and Public Health Center Y means that PrEP services can run well. The forms of support provided include assistance in serving PrEP patients if other health workers experience difficulties, such as helping with anamnesis, counseling, blood pressure, and other general tasks that health workers can carry out. Apart from that, the duties of other health workers should be replaced if there are health workers who have official assignments outside the health center. In this case, the health workers who replace them have taken part in OJT, so they already understand the flow and tasks that must be carried out when providing PrEP services.

Attitudes and behavior of the PrEP outreach public

The outreach communities referred to in this study are PKBI, PEKA, and other NGOs that support the practices of health workers while implementing the PrEP program. Collaboration between health workers and outreach communities is essential in PrEP services because it can increase the coverage of PrEP access (Afriana et al., 2022). The form of support from the PrEP outreach public is in the form of outreach activities carried out through promotional activities and inviting at-risk groups who are public members to access PrEP. Apart from that, the outreach public will also help health workers carry out regular follow-ups regarding compliance with PrEP drug consumption and follow-up visits that must be carried out by individuals who have accessed PrEP. The existence of support from the PrEP outreach community supports the success of the PrEP program implemented by health workers. This is proven by the health worker's statement that the increase in the number of people accessing PrEP was due to the role of the outreach community, which was able to invite its community to access PrEP at the public health center.

CONCLUSION

The PrEP program is an HIV prevention program through the use of prophylaxis aimed at at-risk groups with negative HIV status. As part of a comprehensive prevention strategy for HIV infection, the use of PrEP needs to be accompanied by safe sex practices, routine HIV testing, HIV risk reduction counseling, and consistent condom use. This study concludes that the practices carried out by health workers in implementing the PrEP program are not entirely to the PrEP program management guidelines published by the Indonesian Ministry of Health RI in 2023. There are still differences in the level of knowledge due to the uneven training received by all PrEP program implementers. This gives rise to different perceptions and attitudes among health workers due to inconsistencies and even contradictions with thought patterns, resulting in the idea that the PrEP program supports LGBT and free sexual behavior in the city of Semarang. However, the informant still tried to be professional in carrying out his duties by the tasks given.

During the program, health workers receive support and facilities that support their performance. Regarding the availability of facilities and infrastructure for the PrEP program at the Public Health Center Apart from that, there

is good support from the head of the public health center, other health workers as colleagues, and the PrEP outreach community so that health workers can carry out the practice easily, especially in reaching risk groups.

Furthermore, the solution to the problem offered in this study is that the Semarang City Health Service can provide a special time allocation to train all health workers who implement the PrEP program in Semarang City at least once a semester. The training topics include PrEP program management (PrEP program flow, medical examinations, supporting laboratory tests, handling of PrEP in particular situations, and use of PrEP in certain conditions), technical monitoring and evaluation of the PrEP program as well as pharmacy management and PrEP logistics, especially related to education pharmacy for PrEP users as well as distribution and logistics requests for PrEP drugs.

Meanwhile, public health centers that implement the PrEP program can monitor and evaluate the effectiveness of health workers' performance in the PrEP service department to re-plan workforce distribution and be more active in carrying out supervision to monitor health workers' practices in implementing the PrEP program.

REFERENCES

- Adilina, N., Rostyaningsih, D., & Lestari, H. (2021). Implementasi Kebijakan Penanggulangan HIV/AIDS di Kota Semarang (Berdasarkan Peraturan Daerah Kota Semarang Nomor 4 Tahun 2013). *Journal of Public Policy And Management Review*, 11(1), 1–17.
- Afriana, N., Luhukay, L., Mulyani, P. S., Irmawati, Romauli, Pratono, Dewi, S. D., Budiarty, T. I., Hasby, R., Trisari, R., Hermana, Anggiani, D. S., Asmi, A. L., Lamanepa, E., Elittasari, C., Muzdalifah, E., Praptoraharjo, I., Theresia Puspoarum, & Devika. (2022). *Laporan Tahunan HIV AIDS 2022 Kemenkes*. 1–91. http://p2p.kemkes.go.id/wp-content/uploads/2023/06/FINAL_6072023_Layout_HIVAIDS-1.pdf
- Amtiyaz, I. T. (2019). Gambaran Pengetahuan Tentang Pre-Exposure Prophylaxis (PrEP) dan Keinginan Penggunaannya Sebagai Pencegahan Penularan HIV Pada Populasi Berisiko Tinggi di Kabupaten Jember. [Undergraduate thesis]. *Jember: Faculty of Nursing, Universitas Jember*.
- Aryani, L., & Pramitasari, R. (2018). Perkembangan Kasus HIV di Kota Semarang: Tinjauan Karakteristik dan Aspek Lingkungan. *Jurnal Kesehatan Masyarakat Indonesia*, 13(1), 7–12.
- Chou R, Evans C, Hoverman A, et al. (2019). Pre-exposure Prophylaxis for the Prevention of HIV Infection: Evidence Report and Systematic Review for the US Preventive Services Task Force. *JAMA*, 321(22). <https://doi.org/10.1001/jama.2019.2591>
- Damayanti, F. N., & Santosa, B. (2022). Profesionalisme Tenaga Kesehatan dalam Penanganan Kegawatdaruratan COVID-19. *Jurnal Hukum Kesehatan Indonesia*, 2(01), 30-36. <https://doi.org/10.53337/jhki.v2i01.20>
- Dapaah, J. M. (2016). Attitudes and Behaviours of Health Workers and the Use of HIV/AIDS Health Care Services. *Nursing Research and Practice*, 2016, 1–9.

- <https://doi.org/10.1155/2016/5172497>
Fitria, A., Safitri, J., & Nisa, H. (2023). Hubungan Akses Informasi Kesehatan dengan Pengetahuan Kesehatan Reproduksi pada Mahasiswa Universitas Islam Negeri Syarif Hidayatullah Jakarta. *JUMANTIK (Jurnal Ilmiah Penelitian Kesehatan)*, 8(2), 180.
<https://doi.org/10.30829/jumantik.v8i2.14256>
- Gibas, K. M., van den Berg, P., Powell, V. E., & Krakower, D. S. (2019). Drug resistance during HIV pre-exposure prophylaxis. *Drugs*, 79, 609-619.
<https://doi.org/10.1007/s40265-019-01108-x>
- Golub, S. A. (2018). PrEP stigma: implicit and explicit drivers of disparity. *Current HIV/AIDS Reports*, 15, 190-197.
<https://doi.org/10.1007/s11904-018-0385-0>
- Health Office of Semarang. (2022). *Profil Kesehatan Kota Semarang*.
<https://pustakadata.semarangkota.go.id/upload/pdf/451-profil-kesehatan-2022.pdf>
- Health Office of Semarang.. (2023). *Workshop PrEP*. Semarang.
- Ministry of Health RI. (2023). *Petunjuk Teknis Tatalaksana Program Profilaksis Pra-Pajanan (PrEP) Oral untuk Orang Berisiko Tinggi Terinfeksi HIV di Indonesia* (B. R. Prabowo (ed.)). Jakarta.
- Ministry of Health RI. (2022a). *Laporan Kinerja Direktorat Jenderal Pencegahan dan Pengendalian Penyakit*. Jakarta.
- Ministry of Health RI. (2022b). *Peraturan Menteri Kesehatan Republik Indonesia Nomor 23 Tahun 2022 Tentang Penanggulangan Human Immunodeficiency Virus, Acquired Immunodeficiency Syndrome, Dan Infeksi Menular Seksual*. Jakarta.
- Ministry of Health RI. (2023). *Laporan Eksekutif Perkembangan HIV AIDS dan Penyakit Infeksi Menular (PIMS) Triwulan I Tahun 2023*.
[https://hivaids-pimsindonesia.or.id/download/file/Laporan TW_I_2023.pdf](https://hivaids-pimsindonesia.or.id/download/file/Laporan_TW_I_2023.pdf)
- Mahariski, P. A., Puspawati, N. M. D., Indira, I. G. A. A. E., Praharsini, I. G. A. A., & Permana, A. (2023). Pre-Exposure Prophylaxis (PrEP) Pada Pencegahan Human Immunodeficiency Virus (HIV) dan Dampaknya Terhadap Infeksi Menular Seksual. *Intisari Sains Medis*, 14(2), 730–738.
<https://doi.org/10.15562/ism.v14i2.1594>
- Mahlare, E., Ramutshila, E., Musekiwa, A., Kuonza, L., Chb, M. B., & Mabuto, T. (2023). *Knowledge, Attitudes and Practices of Oral HIV Pre -Exposure Prophylaxis (PrEP) Among Healthcare Workers in the Ekurhuleni District, South Africa*. 113(12), 1548–1556.
<https://doi.org/10.1371/journal.pone.0241399>
- Muwonge, T. R., Nsubuga, R., Brown, C., Nakyanzi, A., Bagaya, M., Bambia, F., Katabira, E., Kyambadde, P., Baeten, J. M., Heffron, R., Celum, C., Mujugira, A., & Haberer, J. E. (2020). Knowledge and Barriers of PrEP Delivery Among Diverse Groups of Potential PrEP Users in Central Uganda. *PLoS ONE*, 15(10 October), 1–15.
<https://doi.org/10.1371/journal.pone.0241399>
- Rensi, N. (2019). Pengaruh Kompetensi Tenaga Medis Dan Pelayanan Kesehatan Terhadap Kepuasan Pasien Pada Puskesmas Poncowati Kecamatan Terbanggi Besar Kabupaten Lampung Tengah. *Jurnal Simplex*, 2(2), 141–152.
- Tetteh, R. A., Yankey, B. A., Nartey, E. T., Lartey, M., Leufkens, H. G. M., & Dodoo, A. N. O. (2017). Pre-Exposure Prophylaxis for HIV Prevention: Safety Concerns. *Drug Safety*, 40(4), 273–283.
<https://doi.org/10.1007/s40264-017-0505-6>
- UNAIDS. (2021). Global AIDS Updates Confronting Inequities. *Global AIDS Update*, p. 386.
https://www.unaids.org/sites/default/files/media_asset/2021-global-aids-update_en.pdf
- Yayasan Kasih Suwitno. (2024). *Daftar Layanan PrEP Di Indonesia*. Jakarta.
<https://sayaberani.org/prep/lokasi-layanan-prep/>