

Triple elimination in pregnant women in Indonesia

by Dinda Sella Octaviana

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Eliminación triple en mujeres embarazadas en indonesia

Dinda Sella Octaviana^{*1}, Afif Nurul Hidayati^{**2,3*}, Muhammad Ilham Aldika Akbar^{***3,4},
Muhammad Miftahussurur^{****5,6}

SUMMARY

Background: Triple elimination, which is an activity to control the transmission of Human immunodeficiency virus (HIV), syphilis, and hepatitis B from pregnant women to babies in Indonesia, has very minimal data regarding progress and current conditions. This study aims to identify the Triple Elimination profile at community health centers in Putat Jaya, Dupak, and Perak Timur, Surabaya.

Methods: This was a retrospective descriptive study by observing and examining medical record data of 1655 pregnant women who visited Antenatal Care (ANC) between January-December 2018.

Results: There were 1 655 data of pregnant women involved in this study. The coverage of antenatal care

activities and quality complete early detection had test coverage results ≥ 95 %, completeness of tests > 60 %, and results < 0.30 %, < 1.70 %, 7.10 % for HIV, syphilis, and hepatitis B, respectively, in three community health centers. In 2018, 3 cases of HIV, 4 cases of syphilis, and 41 cases of hepatitis B were found in three community health centers. The coverage of handling activities for positive pregnant women and childbirth has a 100 % percentage at Putat Jaya and Perak Timur Community Health Centers, but the data were incomplete at Dupak Community Health Center. No data were obtained regarding the coverage of children's examination activities and the handling of children from infected mothers.

Conclusion: The triple elimination program has met the criteria per the guidelines set by the World Health Organization. There were no pregnant women who

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ORCID: 0000-0002-5598-2211*
ORCID: 0000-0003-2558-2046**
ORCID: 0000-0002-2003-9282***
ORCID: 0000-0003-1415-6033****

¹¹
¹Faculty of Medicine, Universitas Airlangga, Surabaya 60131, Indonesia

²Department of Dermatology and Venereology, Faculty of Medicine-Dr. Soetomo Teaching Hospital, Universitas Airlangga, Surabaya 60131, Indonesia

³Universitas Airlangga Teaching Hospital, Surabaya 60115, Indonesia

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⁴Department of Gynecology and Obstetrics, Faculty of Medicine-Dr. Soetomo Teaching Hospital, Universitas Airlangga, Surabaya 60131, Indonesia

⁵Gastroenterology and Hepatology Division, Department of Internal Medicine, Faculty of Medicine-Dr. Soetomo Teaching Hospital, Universitas Airlangga, Surabaya 60131, Indonesia

⁶Institute Tropical Disease, Universitas Airlangga, Surabaya 60115, Indonesia

²⁸
• Corresponding Author: Afif Nurul Hidayati ¹²
Department of Dermatology and Venereology, Faculty of Medicine, Universitas Airlangga/Dr. Soetomo Teaching Hospital/ Universitas Airlangga Teaching Hospital, Surabaya 60131, Indonesia Jalan Mayjend Prof. Dr. Moestopo No. 47 Surabaya 60131, Indonesia.

Tel: +6231-502-3865; Fax: +6231-502-3865
E-mail: dokterafifnurulhidayati@gmail.com

suffer from more than one disease from the three infectious diseases.

Keywords: Triple elimination, pregnancy, HIV, syphilis, hepatitis B, profile

RESUMEN

Antecedentes: La Triple Eliminación, que es una actividad para controlar la transmisión del virus de la inmunodeficiencia humana (VIH), la sífilis y la hepatitis B de mujeres embarazadas a bebés en Indonesia, tiene muy pocos datos acerca del progreso y las condiciones actuales. Este estudio tiene como objetivo identificar el perfil de Triple Eliminación en los centros de salud comunitarios en Putat Jaya, Dupak y Perak Timur, Surabaya.

Métodos: Se trata de un estudio descriptivo retrospectivo mediante la observación y el examen de los datos de las historias clínicas de 1 655 mujeres embarazadas que visitaron la Atención Prenatal (ANC) entre enero y diciembre de 2018.

Resultados: Hubo 1655 datos de mujeres embarazadas involucradas en este estudio. La cobertura de las actividades de atención prenatal y la detección temprana completa de calidad tuvieron resultados de cobertura de pruebas $\geq 95\%$, completitud de las pruebas $> 60\%$ y resultados $< 0,30\%$, $< 1,70\%$, $7,10\%$ para VIH, sífilis y hepatitis B, respectivamente, en tres centros de salud comunitarios. En 2018, se encontraron 3 casos de VIH, 4 casos de sífilis y 41 casos de hepatitis B en tres centros de salud comunitarios. La cobertura de las actividades para el manejo de mujeres embarazadas positivas y el parto tiene un porcentaje del 100 % en los Centros de Salud Comunitarios de Putat Jaya y Perak Timur, pero los datos estaban incompletos en el Centro de Salud Comunitario Dupak. No se obtuvieron datos sobre la cobertura de las actividades de examen de los niños y el manejo de los niños de madres infectadas.

Conclusión: El programa de triple eliminación ha cumplido con los criterios establecidos por la Organización Mundial de la Salud. No hubo mujeres embarazadas que padecieran más de una enfermedad de las tres enfermedades infecciosas.

Palabras clave: Triple eliminación, embarazo, VIH, sífilis, hepatitis B, perfil.

Abbreviations: HIV - Human immunodeficiency virus, STIs - Sexually Transmitted Infections, WHO - World Health Organization, ANC - Antenatal Care, MSM - Minimum Service Standards, EMTCT - Elimination of Mother to Child Transmission, PMCT - Pencegahan Penularan dari Ibu ke Anak, HCV - Hepatitis C Virus, MTCT - Mother to Child Transmission, PMTCT - Prevention of Mother to Child-Transmission, HBV - Hepatitis B Virus, MSM - Men Sex with Men, FSW - Female Sex Workers, IDU - Injections Drug User

INTRODUCTION

Human immunodeficiency virus (HIV), syphilis, and hepatitis B are sexually transmitted infections (STIs) that can be transmitted by pregnant women to their babies. All three have the same transmission route in form of sexual, blood, and vertical contact from mother to fetus. Vertical transmission of transmission from mother to fetus generally occurs during pregnancy, although it can occur during labor and breastfeeding at a lower frequency. Transmission of HIV, syphilis, and Hepatitis B to children from mothers has an impact on morbidity, disability, and death (1).

According to WHO data, in Southeast Asia in 2015, the HIV figure reached 5.1 million patients with 77 000 pregnant women living with HIV, and 19 000 new cases of pediatric HIV infection have been discovered. This figure is arguably fantastic compared to other regions. Meanwhile, for syphilis, the incidence rate has shown an increase of 0.32 % in Southeast Asia. The number of patients shows up to 167 000 cases of syphilis in pregnant women. It has a devastating effect, producing 65 800 adverse outcomes, including premature fetal death. For hepatitis B, Southeast Asia accounts for 15 % of the total number of hepatitis B patients worldwide with 39 million people.

In Indonesia, the prevalence rate for the three diseases reaches 0.39 % for HIV, 1.7 % for syphilis, and 2.5 % for hepatitis B (2). With a large population of Indonesia, this figure is still high. Thus, more attention is needed to overcome it. East Java, with five other provinces in Indonesia, i.e., West Java, DKI Jakarta, Riau, Bali, and Papua, is among the provinces considered HIV concentrated, indicating areas with high risk. The number of infections in East Java in 2017 was 39 633 infections. Surabaya is a contributor to a large number of patients. In 2017, 205 female

patients were found in Surabaya. However, this figure is still lower than expected because many cases are under-reported. The number of syphilis patients in Surabaya in 2017 was 126 people with 30 female patients. Hepatitis B in East Java has also shown a 3-fold increase in incidence in 2017. One thousand two hundred and eighty-seven cases have been reported with 80.4 % female patients or 1 035 patients (3). From the data listed above, a high number of female patients tends to increase the chance of infection. HIV, syphilis, and hepatitis B from mother to baby.

Preventive activities have been carried out by the Ministry of Health of the Republic of Indonesia with the implementation of a program called Triple Elimination per WHO recommendations (2017). These activities include the implementation of HIV, Hepatitis B, and Syphilis tests during Antenatal Care (ANC) for Pregnant Women. The Triple Elimination Program has a target of reaching 100% by 2030 according to what is written in the Regulation of the Minister of Health of the Republic of Indonesia number 52 of 2017 concerning the Elimination of Transmission of HIV, Syphilis, and Hepatitis from Mother to Child. East Java Health Office 2017 data shows that 38 cities, including Surabaya, are still lacking ANC coverage for pregnant women, which should be 100 % in the Minimum Service Standards (MSS).

Research on STIs of HIV, syphilis, and hepatitis B in pregnant women, especially regarding the triple elimination program, is still very minimal. Previous research that was carried out was limited to the previous program, PPIA (4,5). In other countries, to be precise in the Netherlands, research was carried out (5,6). The results suggest that the number of HIV, syphilis, and hepatitis B infections is so low that it suggests WHO to re-validate the elimination program because more data is needed in its implementation. Several recent studies focusing on the profile of the triple elimination program have been carried out by several researchers abroad with much valuable information regarding the ongoing triple elimination (7,8). During its implementation to date in Indonesia, there is very little data on progress and current conditions. This is about the Triple Elimination program so that research needs to be done to evaluate whether the

activities carried out are by the targets, targets, and scope of activities that have been set. Also, data on pregnant women to suffer from the three diseases in the form of HIV, syphilis, and hepatitis B are very minimal. In connection with this problem, this study aims to identify the Triple Elimination profile at community health centers in Putat Jaya, Dupak, and Perak Timur, Surabaya, Indonesia.

MATERIALS AND METHODS

This research is a type of retrospective descriptive study using total sampling by looking at and examining the medical records of 1 655 pregnant women who visited ANC (Antenatal Care). The research was conducted in three community health centers, Putat Jaya Community Health Center, Dupak Community Health Center, and Perak Timur Community Health Center. The selection of the three health centers was based on the estimation of the highest number of cases and the locations that were far apart representing all regions. Data collection was carried out from October to December 2019 at three community health centers. The inclusion criteria in this study were pregnant women who visited antenatal care to the community health centers in Putat Jaya, Dupak, and Perak Timur, Surabaya, while there were no exclusion criteria in this study. After getting the data through medical records, the data is then matched with the data recapitulation of the community health centers. Furthermore, the data were processed according to predetermined variables: 1) the test coverage which was divided into tested and not tested; 2) the completeness of the test with only 1 test, 2 tests, and complete categories; 3) the test results were only HIV positive, hepatitis only positive, syphilis positive only, HIV and syphilis positive, HIV and hepatitis positive, syphilis and hepatitis positive, all three HIV positive; 4) treatment of positive pregnant women divided into getting therapy, not getting therapy; 5) delivery place with the category of midwives, health centers, hospitals, and outside health facilities; 6) the treatment of infected infants is divided into receiving treatment and not receiving treatment; and 7) the results of the baby's test are HIV positive, syphilis positive, hepatitis B positive, negative. The first data

TRIPLE ELIMINATION IN PREGNANT WOMEN

processing using Microsoft Excel. The data that has been collected is then analyzed using SPSS to get the desired results. Ethical clearance has been obtained from the Faculty of Medicine, Universitas Airlangga, Surabaya, East Java, Indonesia.

RESULTS

Data were obtained through medical record data collection for the period January-December 2018. During that period, 1 655 pregnant women visited three community health centers with details of 443 at Putat Jaya Community Health Center, 632 at Dupak Community Health Center,

and 580 at Perak Timur Community Health Center.

The research results are presented based on the scope of the triple elimination program activities. The first scope of activity is Antenatal Service, Quality Complete Early Detection with variable test coverage, test completeness, and test results. In this study, from Table 1, it is known that the test coverage results obtained at the three community health centers from January to December 2018 reached 100 %. It can be concluded that in the test coverage variable, the three community health centers met the WHO criteria because ≥ 95 % of pregnant women who visited had been tested in the triple elimination program at the three community health centers.

Table 1

The Coverage of Triple Elimination Program Tests at Putat Jaya Community Health Center, Dupak Community Health Center, and Perak Timur Surabaya Community Health Center in the Period of January-December 2018

Community health center	Number of visits	Test Coverage			Meet WHO Criteria / No
		Tested	Without tested	Percentage	
Putat Jaya	443	443	0	100	Yes
Dupak	632	632	0	100	Yes
Perak Timur	580	580	0	100	Yes

The test completeness variable is divided into 3, i.e., only 1 test, 2 tests, and 3 tests. Based on medical record data for pregnant women who visited three community health centers in the period January-December 2018, the three community health centers met the criteria set out in the triple elimination guidebook by the

Ministry of Health of the Republic of Indonesia based on the criteria set by WHO. In 2018, WHO determined that 60 % of pregnant women were thoroughly screened, i.e., HIV, syphilis, and hepatitis. The results obtained in Table 2 show that the three community health centers fulfill the criteria.

Table 2

Completeness of Triple Elimination Program Tests at Putat Jaya Community Health Center, Dupak Community Health Center, and Perak Timur Surabaya Community Health Center in the Period of January-December 2018

Community health center	Number of visits	Test Coverage			Test Category			%	Meet the criteria / not
		HIV	Syphilis	Hepatitis B	Only 1 test	2 test	Complete		
Putat Jaya	443	443	443	443	0	0	443	100	Yes
Dupak	632	590	576	529	44	76	509	80.54	Yes
Perak Timur	580	580	580	580	0	0	580	100	Yes

Table 3 shows the number of patients with each disease at each community health center from January to December 2018. Of the 1 655 pregnant women tested for the triple elimination program, there were 3 HIV cases, 4 cases of

syphilis, and 41 cases of hepatitis B according to the total number of the three community health centers. There were no pregnant women who suffered from more than one disease from the three.

Table 3

Number of HIV, Syphilis, and Hepatitis B Patients Recorded in the Triple Elimination Program at Putat Jaya Community Health Center, Dupak Community Health Center, and Perak Timur Surabaya Community Health Center in the Period of January-December 2018.

Community health center	HIV	Syphilis	Test Results				
			HBsAg	HIV+ HBsAg	HIV+ Sifilis	HBsAg+ Sifilis	HIV+HBsAg+ Syphilis
Putat Jaya	0	0	4	0	0	0	0
Dupak	3	4	13	0	0	0	0
Perak Timur	0	0	24	0	0	0	0

The percentage of each disease is presented in Table 4. It is known that HIV had a percentage of 0 % for Putat Jaya Community Health Center, 0.5 % for Dupak Community Health Center, and 0 % for Perak Timur Community Health Center. Of the three health centers, 2 out of 3 community

health centers had met WHO criteria regarding a maximum HIV percentage of 0.30 %, i.e., Putat Jaya and Perak Timur Community Health Centers, while Dupak Community Health Center still had a relatively high rate of 0.5 % (3 out of 632) cases found.

Table 4

The Test Results for the Triple Elimination Program at Putat Jaya Community Health Center, Dupak Community Health Center, and Perak Timur Surabaya Community Health Center in the Period of January-December 2018 toward WHO Criteria Based on Surveillance Indicators

Disease	Community health center						Meet the criteria/not
	Putat Jaya		Dupak		Perak Timur		
	Frequency n=443	%	Frequency n=632	%	Frequency n=580	%	
HIV	0	0	3	0.5	0	0	Yes
Syphilis	0	0	4	0.6	0	0	Yes
Hepatitis B	4	0.9	13	2.1	24	4.1	Yes

Syphilis has the maximum criteria for infected pregnant women at 1.70 %. The percentage rate for syphilis in the three health centers studied did not show a high number, i.e., 0 % for Putat Jaya Community Health Center, 0.6 % for Dupak

Community Health Center, and 0 % for Perak Timur Community Health Center. Thus, it can be concluded that the three health centers have met the WHO criteria in the number of pregnant mothers with maximum infection against syphilis.

TRIPLE ELIMINATION IN PREGNANT WOMEN

For hepatitis B, the maximum number set by WHO is the highest at 7.10 % because hepatitis B cases in Indonesia are still straightforward to find. It can be seen that hepatitis B cases are the highest percentage, which can be found in Table 4. Three out of 3 community health centers have met WHO criteria with a percentage of 0.9 for Putat Jaya Community Health Center, 2.1 % for Dupak Community Health Center, and 4.1 % for Perak Timur Community Health Center.

The second scope of activity is the handling of positive pregnant women with therapy variables. WHO hopes that according to the indicators set out in the guidelines for the triple elimination program, 100 % of positive pregnant women get treatment. The results of the variables are presented in Table 5. From the figures obtained, Putat Jaya Community Health Center has met the WHO's criteria. Perak Timur Community Health Center did not reach it, while Dupak Community Health Center required further data.

Table 5

Coverage of positive pregnant mother therapy in the triple elimination Program at Putat Jaya Community Health Center, Dupak Community Health Center, and Perak Timur Surabaya Community Health Center in the Period of January-December 2018

Community health center	HIV			Therapy Syphilis			Hepatitis B			Meet the criteria / not
	Number of positive pregnant women treated	The number of positive pregnant women	%	Number of positive pregnant women	The number of positive pregnant women treated	%	Number of positive pregnant women	The number of positive pregnant women treated	%	
Putat Jaya	0	8	-	0	-	-	4	4	100	Yes
Dupak	3	No data	No data	4	No data	No data	13	No data	No data	No
Perak Timur	0	-	-	0	-	-	24	23	96	No

The third activity scope is delivery with the variable of the place of delivery. These criteria are 100 % positive mothers give birth in health care facilities and are assisted by health personnel. From Table 6, it is known that the data has been obtained. At the Putat Jaya Community Health Center, all pregnant women give birth in health facilities, precisely at the hospital, without specific information. The conclusion that can be drawn is that the Putat Jaya Community Health Center met the WHO criteria in the scope of activities for the delivery of hepatitis B. The Dupak Community Health Center with 3 HIV-positive pregnant women, 4 positive syphilis pregnant women, and 13 hepatitis B positive pregnant women, the scope of maternity activities cannot be presented because no data can be accessed at

the community health centers because they were referred to a referral hospital.

Delivery place

Furthermore, Perak Timur Community Health Center had a 100 % percentage in meeting the WHO criteria regarding the place of delivery. It can be concluded that the Perak Puskesmas have met the WHO criteria regarding the place of delivery for positive pregnant women. The fourth and fifth activities' scope is the handling of children from infected mothers, and the results of children's examinations cannot be presented because data were not obtained because they were referred to higher health facilities, i.e., hospitals.

Table 6

The Delivery Place of Positive Pregnant Women in the Triple Elimination Program at Putat Jaya Community Health Center, Dupak Community Health Center, and Perak Timur Surabaya Community Health Center in the Period of January-December 2018

Community health center	HIV			Delivery place Syphilis			Hepatitis B			Meet the criteria / not	
	n	Health facilities	%	n	Health facilities	%	n	Health facilities	%		
Putat Jaya	0	8	-	0	-	1	4	8	4	100	Yes
Dupak	3	No data	No data	4	No data	No data	13	No data	No data	No data	No data
Perak Timur	0	-	-	0	-	-	24	24	100	100	Yes

DISCUSSION

From the results of the research conducted, it was found that pregnant women suffered from more than one disease from the three infectious diseases simultaneously. This is in line with other studies which found that the prevalence of co-infection among the three diseases¹⁷ as very low (9,10). In Uganda, for example, there was no HBV and HCV co-infection in HIV⁴-positive women (11,12). Co-infection may be influenced by factors such as the prevalence of each infection in specific communities, the risk behaviors involved in the transmission, and the time/age at which maximum exposure to each infection occurred (13). The absence of HBV co-infection in HIV-positive women was due to the absence of risk factors in the study population.

This study showed that the test coverage¹ of the three health centers met the WHO criteria. Factors that could help countries move towards EMTCT HIV and syphilis are the high coverage of ANC services, routine screening for HIV and syphilis in pregnancy, prompt follow-up of seropositive pregnant women and exposed infants, and a well-organized monitoring and surveillance system that captures both national and subnational data (14). A study (15) showed that despite a 1 % (high rate) prevalence of syphilis, elimination

of congenital syphilis could be achieved with coverage. ANC >95 %, screening for syphilis >95 %, rapid treatment³² h benzathine IM in early-pregnancy positive women, and follow-up of exposed infants. In the Americas, for example, research shows that when coverage increases, the number of cases dramatically decreases due to the implementation of well-integrated testing and immunization. In contrast to America, a country⁵ with low test coverage, Africa, has resulted in a high prevalence of HIV, syphilis, and hepatitis B (16). This shows that test coverage has a significant impact on the number of cases of the disease.

In 2018, WHO expected 60 % of pregnant women to be thoroughly tested for HIV, syphilis, and hepatitis B.¹⁴ The results showed that the three community health centers were good. There was one community health center, i.e., Dupak Community Health Center, which did not reach 100 % completeness but following the criteria set in 2018. The incompleteness was caused by incomplete medical record recapitulation, which as a source of research data, or because the test was not complete. Completeness of the tests carried out is needed to help the program achieve its targets. Cuba is the first country validated by WHO to be a free MTCT country regarding HIV, syphilis, and hepatitis B. Cuba has coverage data available at the polyclinic level. It is confirmed

in all regions that more than 95 % of pregnant women are thoroughly tested at least once during pregnancy (14).

According to the test results obtained, the prevalence of the three diseases in the three community health centers was low and has met the WHO criteria. The case rate is not presented because the number of cases of infected infants was unknown, and only the number of births was known.²¹ For HIV, the WHO criteria set the maximum number of infected pregnant women as 0.30 %, and the management expects 100 % of pregnant women with HIV to be treated with ARVs. From the results of the research, the three community health centers had a very low number of HIV cases, even 0 in both community health centers. The number of cases was found to be low due to 3 possible factors. First, the case rate was low due to the success of the program. The second is the “iceberg phenomenon” in which the number of people detected and identified with HIV is only a fraction of the actual cases because most of them may not have been discovered (17). The third possible cause is due to incomplete data recapitulation in medical records. Complete data summaries are also important aspects that need to be considered. More and more complete input will lead to more and more identified HIV cases so that it can overcome the problem³³ of the iceberg phenomenon and reduce the number of HIV cases in pregnant women, infants, and globally (18). In addition, adequate training of medical personnel is also a crucial issue that should be considered (19). This has also been proven by China, and the programs implemented bring significant changes in China (19).

The WHO criteria for syphilis in triple elimination is a maximum infection prevalence of 1.70 %. In this study, it was found that the prevalence rate of syphilis was very low in the three community health centers. The three community health centers have met the established WHO criteria. Even with very low numbers, the state should not be negligent with the results. Research suggests that the doubling of the congenital rate of syphilis in 2016 in Japan is a result of the reduced public health focus on syphilis due to the perception that³⁸ syphilis is no longer a significant source of morbidity and mortality (7,20). The low case rate of syphilis represents a strong global response, including

the WHO addressing the epidemiology of HIV and congenital syphilis. However, previous research has argued that the WHO guideline, including triple elimination, is sufficient to clear congenital syphilis in a country (7). It argues that a more effective integration strategy is needed. The approach offered is described by a simple analogy. First, “turn off the tap” by controlling cases in the high-risk group or the key population, which are sources including MSM, FSW, Waria, and IDU. The second is “plug up the hole” a preventive movement or preventing transmission from the key population to pregnant women. And the last strategic step that needs to be done is to “dry our the floor” by conducting EMTCT. This is also supported by research that conducted a modeling study in 9 countries in Africa and found that even though the WHO³⁷ target had been set and global EMTCT was met,²⁹ one of these countries achieved the goal (21). In conclusion, the elimination of syphilis MTCT globally may be achieved. Still, it is difficult to maintain if syphilis cases in the key population are not well controlled while promoting the integration of syphilis screening in pregnant women.

Furthermore, for hepatitis B, WHO sets criteria in the form of a maximum prevalence of cases in 2018 of 7.10 %. The three community health centers have met the established standards. This does not mean that the number of hepatitis B cases is very low, but it still requires further efforts to get EMTCT. Several studies (22–24) suggest that the numbers recorded are not representative and are estimated to be only 10 % of the actual number of sufferers. Meanwhile, in infants, surveillance for acute hepatitis B infection cannot fully capture the population prevalence of HBV infection because most infections in infants and children are asymptomatic (25). Even as of December 2017, Indonesia was not yet among² the 25 countries with HBsAg seroprevalence in children aged 5 years which decreased to <1 % (7).

According to the recommendations set by WHO, babies born should receive Hbvacc-BD immediately for 24 hours. The study found that children who received the vaccine more than 12 hours after birth had a 2.9 times greater risk than children who received the vaccine right after birth or <12 hours. Hepatitis B immunization coverage <24 hours according to health office data in 2018 reached 98.94 %, 100 %, and 89.87

% for community health centers in Putat Jaya, Dupak, and Perak Timur, Surabaya, respectively. The program that has been implemented was estimated to be able to prevent 37 million cases of chronic HBV infection and more than 31 million hepatitis B-related deaths during the lifetime of children born between 1990 and 2014 who did not have a hepatitis B vaccination program (26). In Indonesia, the results of PMTCT programs regarding HBV have not been systematically evaluated to date. Identifying the progress of the HBV MTCT will facilitate further projection and target setting. Also, understanding the factors related to program outcomes is very important to understand better how policies and programs will be established (25).

According to WHO recommendations, HIV-positive pregnant women should be treated with ARV in the form of a Fixed-Dose Combination, which is consumed once a day, for life with coverage of 100% or syphilis-positive pregnant women, 100% of pregnant women were treated with Benzathine Penicillin G 3.4 million IU IM single dose in the early phase, repeated 2 times with an interval of 1 week or referred. Furthermore, for hepatitis B-positive pregnant women, 100% of patients must be referred. Following these guidelines, 1 community health center has met these criteria, i.e., Putat Jaya Community Health Center, while the other 2, the data were not available because they were referred to a referral hospital and did not meet. In Putat Jaya Community Health Center, 100% of pregnant women who were positive for hepatitis B received treatment by referral while at Perak Timur Community Health Center only 96%.

According to the data obtained, 2 out of 3 community health centers have met the specified criteria, i.e., 100% of pregnant women give birth in health facilities. The figures obtained must be maintained and are expected to exist in all community health centers and hospitals in Indonesia. Additional policies can also be an applied solution. China has a national policy that requires pregnant women to give birth in health facilities to reduce maternal and infant mortality rates (27). Another aspect to consider is that the hospital level is related to the risk of MTCT. It was also found that MTCT rates were higher for children sent to district-level hospitals or below than for those assigned to regional or referral

hospitals with complete facilities (25). Other considerations referred to are the management of vaccination procedures and knowledge of medical personnel. However, the authors also said that further research is needed. Furthermore, the last one for the variable handling of children from infected mothers and the results of examinations in children did not get data because they were referred to the hospital.

CONCLUSION

The triple elimination program at three community health centers has met the WHO criteria. The number of cases of the three diseases is low in pregnant women (below the maximum percentage of infected pregnant women) with no pregnant women who suffer from more than one disease from three infectious diseases. WHO criteria regarding the triple elimination program at Putat Jaya, Dupak, and Perak Timur Community Health Centers in Surabaya are fulfilled in the quality of complete antenatal care and early detection activities, but the data was incomplete for Dupak Community Health Center in the handling of pregnant women with positive results, and childbirth. Examination results activities on children and the handling of children from infected mothers require further data.

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Disclosure

There were no conflicts of interest in this research conducted.

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