

# The Profile of Syphilis and Human Immunodeficiency Virus (HIV) Infection in Street Children at Home Shelter of Social Services in Medan

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## ABSTRACT

**Background:** Syphilis and HIV infection have similar ways of transmission, therefore these infections can affect similar patient groups and co-infection is common. Street children are very susceptible to sexual transmitted infection and HIV due to their lack of protection and care from their parents and also they often use addictive substances. **Aim:** To find out the profile of syphilis and HIV infection in street children at home shelter of social services in Medan. **Subject and method:** This was a cross-sectional descriptive study involving 50 street children at home shelter of social services in Medan. We did serologic examinations (VDRL/TPHA and HIV) to all of the subjects. **Results:** In this study, from 50 subjects, most of them were 14 – 18 years old (86.0%), male (98.0%) with the highest level of education was junior high school (52.0%). There were three children (6.0%) with syphilis, all of them were 14 – 18 years old, males with the highest level of education was junior high school. Five children (10.0%) were positive HIV, all of them were males and 14 – 18 years old. There was one child (2.0%) with syphilis and HIV co-infection. **Conclusion:** Most of street children in home shelter of social services in Medan were 14 – 18 years old, male, with the highest level of education was junior high school. Proportion of syphilis in this study was 6.0% and HIV 10.0%. Syphilis and HIV co-infection was found 2.0% in this study.

**Keywords:** HIV, street children, syphilis, syphilis and HIV co-infection.

## INTRODUCTION

Syphilis is a chronic bacterial infection caused by *Treponema pallidum*. This infection is endemic in low-income countries, but can occur at lower rates in middle-income and high-income countries.<sup>[1]</sup> Syphilis passes through four distinct clinical phases: primary stage, secondary stage, a latent period and tertiary stage.<sup>[2]</sup> Human Immunodeficiency Virus (HIV) is a lymphotropic human retrovirus, which is predominantly transmitted through sexual contact. The profound immunosuppression that defines HIV disease results from progressive depletion of CD4+ T lymphocytes.<sup>[3]</sup> Syphilis and HIV infection can affect similar patient groups and co-infection is common.<sup>[4]</sup>

HIV and *Treponema pallidum* share transmission pathways and their concomitant diagnosis is not uncommon. The coexistence of both infections can result in interactions between them.<sup>[4]</sup> Syphilis produces genital lesions that increase the risk of HIV transmission and it can also impact negatively on the immuno-virological status of patients who have HIV. Syphilis causes viral load blips in virologically suppressed patients on antiretroviral therapy (ART), as well as a reduction in the CD4 lymphocyte count. The

importance of this interaction is that co-infection increases the risk of HIV transmission.<sup>[5]</sup>

Street children are susceptible to sexual transmitted infection (STI) and HIV infection. Characteristically, street children tend to live without protection and care from their parents, and often use addictive substances, which can cause sexual abuse and STI and HIV infection.<sup>[6]</sup> Public Health Agency of Canada in 2006, found that syphilis was significantly increasing among street children in 2003 (0.7%) compared to no cases detected in 2001. The prevalence rate of HIV in street youth did not change significantly in all survey years.<sup>[7]</sup>

A study in Kenya found that female street children had higher risk to have STI and HIV infection compared to male street children. They found syphilis was 6.0% and HIV infection 15.0%. Female street children susceptible to sexual abuse and often engage in risky sexual behaviors such as transactional sex.<sup>[8]</sup>

## METHODS

This study was conducted from April until September 2018. It was designed as cross-sectional descriptive study involving 50

street children aged 6-18 years old at home shelter of social services in Medan, Indonesia. Each subjects signed informed consent were included in this study. All the subjects were interviewed and screened for syphilis and HIV.

Data were analyzed descriptively to determine the frequency distribution of research subjects based on the characteristics of age, sex, level of education, length of time being street children, reasons for being street children, relationships with family and parental conditions. In addition, data were also analyzed descriptively to determine the proportion of syphilis infection, HIV and co-infection of syphilis and HIV and the frequency distribution of the characteristics of the research subjects based on the incidence of syphilis infection, HIV and co-infection with syphilis and HIV.

## ETHICS

Ethical clearance was given by Health Research Etchical Committee, Faculty of Medicine, University of Sumatera Utara

## RESULTS

In this study, we found that the majority of street children at home shelter of social services in Medan were street children with the age group 14-18 years old (86.0%), male sex (98.0%), with the highest education level was middle school (52.0%), duration being street children was for 3-4 years (42.0%) due to economic reasons (70.0%). Most of the street children were still in contact with their families (74.0%) and with the conditions of divorced parents (40.0%) (Table 1).

**Table 1: The distribution of demographic characteristics of the subjects**

Characteristics	Subject	
	n	(%)
Age (group)		
1. 6 – 9	0	0,0
2. 10 – 13	7	14,0
3. 14 – 18	43	86,0
Gender		
1. Male	49	98,0
2. Female	1	2,0
Highest level of education		
1. Never attended school	2	4,0
2. Primary school	13	26,0
3. Middle school	26	52,0
4. High school	9	18,0
Duration being street children		
1. 1 – 2 years	14	28,0
2. 3 – 4 years	21	42,0
3. > 4 years	15	30,0
Reason being street children		
1. Friends	15	30,0
2. Economic	35	70,0
Relationship with families		
1. In contact	37	74,0
2. No contact	13	26,0
Parental status		
1. Complete	11	22,0
2. Divorced	20	40,0
3. One of the parents had died	17	34,0
4. Both of the parents had died	2	4,0

We found syphilis in 3 children (6.0%), aged 14 – 18 years old, male with highest level of education was middle school. The characteristics for subjects with syphilis was shown in table 2.

**Table 2: The distribution of demographic characteristics of the subjects with syphilis**

Characteristics	Syphilis				Total	
	Reactive		Non reactive		n	(%)
	n	(%)	n	(%)		
Age (group)						
1. 10 – 13	0	0,0	7	100,0	7	100,0
2. 14 – 18	3	7,0	40	93,0	43	100,0
Gender						
1. Male	3	6,1	46	93,9	49	100,0
2. Female	0	0,0	1	100,0	1	100,0
Education level						
1. Never attended school	0	0,0	2	100,0	2	100,0
2. Primary school	0	0,0	13	100,0	13	100,0

3. Middle school	3	11,5	23	88,5	26	100,0
4. High school	0	0,0	9	100,0	9	100,0
Duration being street children						
1. 1 – 2 years	0	0,0	14	100,0	14	100,0
2. 3 – 4 years	2	9,5	19	90,5	21	100,0
3. > 4 years	1	6,7	14	93,3	15	100,0
Reason being street children						
1. Friends	1	6,7	14	93,3	15	100,0
2. Economic	2	5,7	33	94,3	35	100,0
Relationship with families						
1. In contact	2	5,4	35	94,6	37	100,0
2. No contact	1	7,7	12	92,3	13	100,0
Parental status						
1. Complete	0	0,0	11	100,0	11	100,0
2. Divorced	3	15,0	17	85,0	20	100,0
3. One of the parents had died	0	0,0	17	100,0	17	100,0
4. Both of the parents had died	0	0,0	2	100,0	2	100,0

In this study, we found HIV infection in 5 children (10.0%), aged 14 – 18 years old, male with highest level of education was middle school. The characteristics for subjects with syphilis was shown in table 3.

**Table 3: The distribution of demographic characteristics of the subjects with HIV infection**

Characteristic	HIV infection				Total	
	Reactive		Non reactive		n	(%)
	n	(%)	n	(%)		
Age (group)						
1. 10 – 13 years old	0	0,0	7	100,0	7	100,0
2. 14 – 18 years old	5	11,6	38	88,4	43	100,0
Gender						
1. Male	5	10,2	44	89,8	49	100,0
2. Female	0	0,0	1	100,0	1	100,0
Highest level of education						
1. Never attended school	0	0,0	2	100,0	2	100,0
2. Primary school	1	7,7	12	92,3	13	100,0
3. Middle school	4	15,4	22	84,6	26	100,0
4. High school	0	0,0	9	100,0	9	100,0
Duration being street children						
1. 1 – 2 years	0	0,0	14	100,0	14	100,0
2. 3 – 4 years	1	4,8	20	95,2	21	100,0
3. > 4 years	4	26,7	11	73,3	15	100,0
Reason being street children						
1. Friends	2	13,3	13	86,7	15	100,0
2. Economic	3	8,6	32	91,4	35	100,0
Relationship with their families						
1. In contact	3	8,1	34	91,9	37	100,0
2. No contact	2	15,4	11	84,6	13	100,0
Parental status						
1. Complete	1	9,1	10	90,1	11	100,0
2. Divorced	3	15,0	17	85,0	20	100,0
3. One of the parents had died	1	5,9	16	94,1	17	100,0
4. Both of the parents had died	0	0,0	2	100,0	2	100,0

In this study, we found syphilis and HIV co-infection in 1 child (2.0%), who was in age group 14 – 18 years old, male with highest level of education was middle school (table 4).

**Table 4: The distribution of demographic characteristics of the subjects with syphilis and HIV co-infection**

Characteristics	Syphilis and HIV co-infection				Total	
	Positive		Negative		n	(%)
	n	(%)	n	(%)		
Age (group)						
1. 10 – 13	0	0,0	7	100,0	7	100,0
2. 14 – 18	1	2,3	42	97,7	43	100,0

Gender						
1. Male	1	2,0	44	98,0	49	100,0
2. Female	0	0,0	1	100,0	1	100,0
Education level						
1. Never attended school	0	0,0	2	100,0	2	100,0
2. Primary school	0	0,0	13	100,0	13	100,0
3. Middle school	1	3,8	25	96,2	26	100,0
4. High school	0	0,0	9	100,0	9	100,0
Duration being street children						
1. 1 – 2 years	0	0,0	14	100,0	14	100,0
2. 3 – 4 years	0	0,0	21	100,0	21	100,0
3. > 4 years	1	6,7	14	93,3	15	100,0
Reason being street children						
1. Friends	0	0,0	15	100,0	15	100,0
2. Economic	1	2,9	34	97,1	35	100,0
Relation to their families						
1. In contact	1	2,7	36	97,3	37	100,0
2. No contact	0	0,0	13	100,0	13	100,0
Parents status						
1. Complete	0	0,0	11	100,0	11	100,0
2. Divorced	0	0,0	20	100,0	20	100,0
3. One of the parents had died	1	5,9	16	94,1	17	100,0
4. Both of the parents had died	0	0,0	2	100,0	2	100,0

## DISCUSSION

In this study, the results showed that the majority of the street children at home shelter of social services in Medan was in age group of 14-18 years. Cumber et al explained the characteristics of street children in Cameroon, where the age range of street children was 12-17 years old, with the highest age group being 15-17 years old (77.7%) and the average age was  $15.4 \pm 1.27$ .<sup>[9]</sup> A study found that the average age of street children in Semarang was 13 years old.<sup>[10]</sup> In a study conducted by Handayani in Medan, it was found that the highest age group of street children was 9-16 years old (58.0%).<sup>[11]</sup> In this study, there is no street children found in age group 6-9 years old, because their parents did not give the permission to participate in this study.

Based on gender, from 50 subjects, it was found that there were more male gender than female. We only get 1 female street child to participate, because the other female children refused to sign the informed consent due to their fear of taking part in this study, even after our explanation and education. Embleton et al found that in developing countries, the number of male street children (57.0%) was found more than female street children (12.0%), with 31% of unknown sex due to nonreporting.<sup>[12]</sup> Cumber et al found that out of 399 street children in Cameroon, there were 80.2% of males and 19.8% of females.<sup>[9]</sup> Handayani also found almost the same results, namely 82.0% of street children male sex and 18.0% of street children were female.<sup>[11]</sup> This gender difference is not uncommon in street children populations as girls are normally involved in activities which keep them at a distance from streets. Girls are employed off the streets, for instance, in factories or as domestic workers in private houses. Whereas, boys are typically more likely to be involved in activities which put them visible on the streets, for example, food vending set-up, washing cars, shoe-shining, peddling goods such as paper tissue boxes to drivers at traffic lights, etc.<sup>[9]</sup>

Based on the level of education, in this study the results showed that the highest level of education was middle school. Cumber et al

found that there were 21.3% of street children who did not go to school, 77.4% of primary schools and only 1.3% of secondary schools.<sup>[9]</sup> This was due to economic conditions, dislike for schooling, oppression and ill-treatment by teacher.<sup>[9,13]</sup> Handayani found that 38.0% of street children were out of school, 24.0% were still in school and 38.0% dropped out of school.<sup>[11]</sup>

In this study, it was found that most children had been on the streets for 3-4 years on economic grounds. Study in Semarang found several conditions that encourage children to take to the streets, including poverty (83.33%), family breakdown (1.96%), parents who do not understand and do not meet the social needs of children (0.98), and other conditions such as self-desire, often beaten by parents and want to be free (13.7%).<sup>[10]</sup>

There are many factors that are interrelated with each other, both the attracting factors of the city itself and the driving factors that can cause a child to become a street child.<sup>[14]</sup> Many children are forced to help their parents and choose the streets as an alternative escape to find work because they assume on the road a lot of sustenance can be obtained in accordance with the level of competency that exists.<sup>[15]</sup> Besides that there are also social factors, namely the influence of friends who already know the world of the street first.<sup>[16]</sup>

Most street children in this study were still in touch or living with family. Most of them had the condition of divorced parents. Family factors also support a child to become a street child. Many street children come from families who are colored by conflict, disharmony, lack of support and affection given by parents, parenting which is sometimes compounded by physical and emotional violence, potentially encouraging children to run away from home. This condition occurs simultaneously leading to the emergence of so much pressure on children that they leave home and flee to the road to seek freedom, protection and support from the streets and from their peers.<sup>[16]</sup>

In this study, it was found that there were 3 street children infected with syphilis (6.0%). The results obtained differed from the results obtained by Sedyaningsih et al, which were carried out on street children in Jakarta. They did not find syphilis infection in the street children.<sup>[17]</sup> A study of street children in India found that syphilis infection was 4.0%.<sup>[18]</sup>

All street children infected with syphilis were in the age group 14-18 years, male with middle school level. Of the 3 street children infected with syphilis, there were 2 children who had been on the streets for 3-4 years and 1 child for > 4 years. All children infected with syphilis had divorced parents, with 2 children who were still in contact with their families while 1 child was no longer related to his family. In a study conducted by Winston et al in Kenya, it was found that there were syphilis infections in female street children (6.0%) and no syphilis infection was found in male street children.<sup>[8]</sup>

In this study, there were 5 street children infected with HIV (10.0%). In a literature study conducted by Norena-Herrera et al, it was found that HIV prevalence in street children ranged from 0.0% (Dallas, Cochamba, and Tehran) to 37.4% (St. Petersburg). Two studies have been conducted in South America, but only in Belo Horizonte (Brazil) was found 1.0% HIV positive. In Asia, especially in Kolkata (India), HIV infection in street children was 1.1%.<sup>[19]</sup> A study conducted by Sedyaningsih (Jakarta, 2005) and Hutami (Semarang, 2014), found no HIV infection in street children.<sup>[17,20]</sup>

All street children infected with HIV were in the age group 14-18 years old and male. Of the 5 HIV-infected children, there were 4 children with middle school education and 1 child with primary education. Of the 5 children there were 4 children who had been on the streets for > 4 years and 1 child for 3 - 4 years, for economic reasons as many as 3 children and joined friends as many as 2 children. There were 3 children from 5 HIV-infected children who had divorced parents, 1 child with parents who were still complete and 1 other child had one parent who had passed away.

Winston et al found HIV infection in female street children was 15.0%, whereas in male street children HIV infection was not found. Factors in older age, sexual violence, the large number of partners and older sexual partners, are found in street children infected with HIV.<sup>[8]</sup> Syphilis and HIV have a close relationship, where ulcers that occur in syphilis can increase HIV transmission.<sup>[21]</sup> HIV sufferers have eight times the likelihood of syphilis.<sup>[22]</sup> In this study the number of street children with syphilis and HIV co-infection was as many as 1 child (2.0%), which was in the age range of 14 - 18 years, male with middle school education level. The child had been on the streets for more than 4 years on the grounds of being a street child because of economic problems. One of the parents of the child had died and was still in contact with his family.

## CONCLUSION

Most of street children in home shelter of social services in Medan were 14 – 18 years old, male, with the highest level of education was junior high school. Syphilis and HIV infection were found 6.0% and 10.0%, respectively. Syphilis and HIV co-infection were found 2.0%. The findings from this study suggest that intervention programs targeting STI and HIV infection and screening for STI and HIV infection are necessary, considering that

street children are vulnerable to the occurrence of sexually transmitted infections and HIV.

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