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# 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

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***Abstract.*** *Syphilis is an STI that is caused by Treponema pallidum, mainly transmitted through sexual contact. Men of childbearing age (25-49 years) are at high risk of contracting syphilis due to sexual activity. The purpose of this study was to analyze the factors that influence the occurrence of syphilis in men of productive age. This research is an observational analytic study with case control design. The study was conducted at the Medan Exemplary Health Center. The study population was all VCT clinic visitors from January 2019 to September 2019. The number of case samples was 59 people, and control samples were 59. Data analysis used univariate analysis, bivariate analysis with chi-square, and multivariate analysis using multiple logistic regression tests. The results showed that the factors that influenced syphilis were syphilis history (p = 0.013), condom use (p = 0.012), and number of sexual partners (p = 0.003), while education variables (p = 0.222), injecting drug use (p = 0.585) and the sex of the spouse has no effect. The most dominant variable influencing the occurrence of syphilis in men of productive age (25-49 years) in Puskesmas Teladan Medan is the history of syphilis / STI. Men of childbearing age who have a history of syphilis / STI have a 15.6 times higher chance of developing syphilis compared to men with no history of syphilis / STI. It is recommended to the Medan Exemplary Health Center to provide health education through counseling about syphilis and ways to prevent it.*

**Keywords***: Syphilis, Male, Productive Age*

## INTRODUCTION

Based on data from the Medan Exemplary Health Center that over the past 3 years the percentage of male syphilis sufferers aged 25-49 years compared to the number of

visits has increased. In 2017 there were 1,389 visits with 60 syphilis sufferers (4.3 percent). In 2018 there were 650 visits with 49 syphilis sufferers (7.5 percent). In 2019 (January-September 2019 period) there were 428 visits with 59 syphilis sufferers (13.8 percent) (Puskesmas Teladan, 2019b)

Syphilis is a sexually transmitted infection (STI) that is still a global problem. Many adults are infected due to this disease. Syphilis not only causes morbidity, but also can cause mortality for sufferers (Emerson, 2009). Pregnant women suffering from syphilis can transmit congenital syphilis which can cause congenital abnormalities and death (Djuanda, 2017). If syphilis is left alone without treatment, syphilis sufferers will experience serious health problems.

## LITERATURE REVIEW

### The Influenced factors of Syphilis Disease

**Age**. Age is one of the important variables in influencing a person's sexual activity so that in conducting sexual activity an older person has more consideration than an immature person (Azwar, 2015). The statistical body divides the age of the population as follows: age <1 year, age 1-14 years, age 15-19 years, age 20-24 years, age 25-49 years, age> 50 years. The age range of 25-49 years is the productive age (Central Statistics Agency, 2018).

Adisthanaya Research in the Skin and Gender Polyclinic of the Sexually Transmitted Infection Sub Division of Sanglah Hospital that syphilis patients who came under the age of 15 years was 0 percent, based on data from the CDC, the incidence of syphilis patients who came under the age of 15 was very low. In this study, it was found that ages 15 to 24 were 34.3 percent, whereas for ages 25 to 49 the highest percentage of syphilis patients was 60 percent (Adisthanaya, 2016).

**Level of education**. Education is an effort of persuasion or learning to the community, so that people want to take actions (practices) to maintain and overcome problems, and improve their health. Changes or actions to maintain and improve health produced by health education are based on knowledge and awareness through

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the learning process, so that the behavior is expected to last long (long lasting) and permanent (lasting), because it is based on awareness. From some of the definitions of education above it can be concluded that education is a persuasive effort undertaken. learning process, the higher a person's education the easier the person is to receive information.

**Use of condoms**. Latex condoms offer protection against syphilis transmission when used consistently and correctly but using a condom must completely cover the ulcer or condyloma of the latum. But the effectiveness of condoms is reduced when individuals experience an increased amount of sexual exposure, especially for diseases such as syphilis that can be transmitted through skin-to-skin contact (Stoltey & Cohen, 2015).

**Injecting drug use**. Injecting drug use is considered to have contributed to an increased risk of STIs such as syphilis and HIV, especially increasing the risk of unprotected sex. This was stated in the HIV / AIDS Study in the Transvestite population in Southeast Asia conducted by WHO in 2010 (Riono, 2008).

**Number of sexual partners**. Many sexual partners and partner choice are believed to increase the risk of sexually transmitted diseases (STDs). Research Joffe et al. (1992) show that there is a strong relationship between the number of sexual partners and STIs such as syphilis. Women with five or more sexual partners are 8 times more likely to report having an STI than those who only have one partner, even after adjusting for age at first sexual intercourse (opportunity).

**Sex partners**. Syphilis is still widespread throughout the world, with increasing numbers among men who have sex with men (Stoltey & Cohen, 2015). Transmission of sexually transmitted infections accounts for the majority of new cases of syphilis. The possibility of transmission of syphilis in sexual relations depends on many factors, including the frequency of sex, sex of the sexual partner (ie penis-vagina, penis-anal or penis-oral), the stage of syphilis in sexual partners, and the vulnerability of sexual partners (Gray et al. , 2011).

The factors that influence syphilis in productive age males in this study use a modification of the theory that is considered the most suitable, namely the modification of the Theory of Transmission of the Transmissible Disease Concept "R. Beaglehole ", Bonita et al (2006) in Basic Epidemiology. Based on previous research that age, education, history of syphilis / STI, condom use, injecting drug use, number of sexual partners, sex of sexual partners influences the incidence of syphilis in productive age men (ages 25-49 years). The theoretical framework for this research is described as follows:

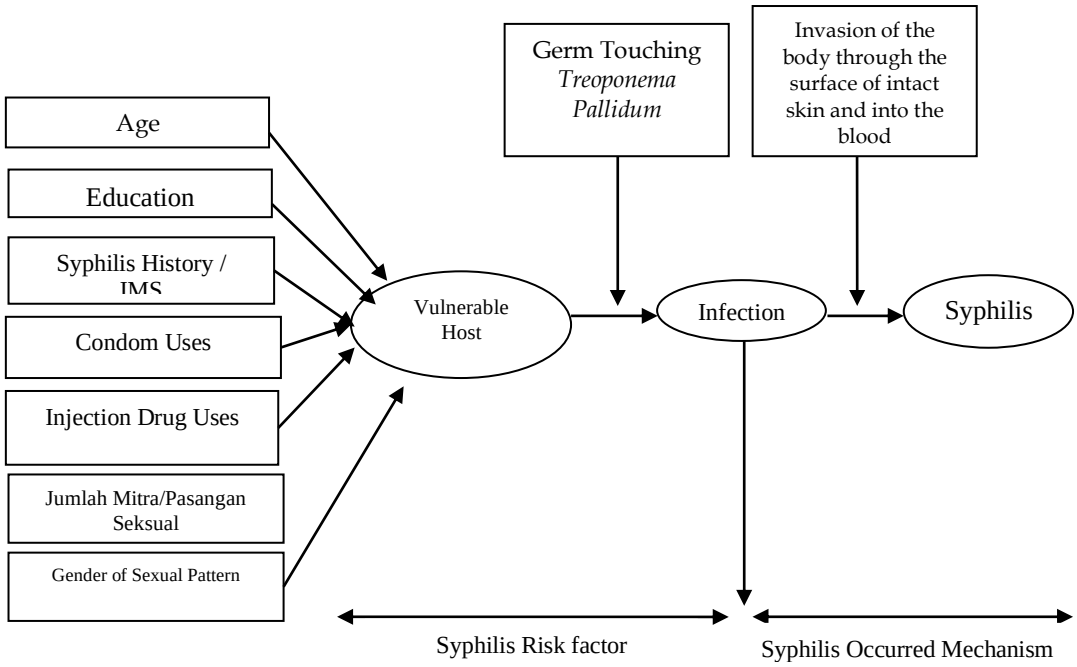


*Figure 1: Theoretical Framework (Modified from the Theory Concept of Transmission of Communicable Diseases "R. Beaglehole" (Bonita, Beaglehole, & Kjellstrom, 2006)*

**METHODOLOGY**

This type of research is an observational analytic study with a case control design. Case control design is an analytical study that analyzes causal relationships using inverse logic, which determines the disease (outcome) first then identifies the cause (risk factors). The reason for using this design is because it is a case-control study that evaluates the relationship between disease exposure by comparing case groups and control groups based on their exposure status. The approach used is a retrospective

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approach in which to see past causal factors for current events (Hastono, 2016). In this study, men of productive age as sufferers of syphilis were cases and men of productive age were not patients of syphilis as controls.

## FINDINGS AND DISCUSSION

### Univariate Analysis

**Age.** The age calculation of respondents was obtained from the average age of 36 years with the lowest age of 25 years and the highest age of 49 years, the majority of respondents in the case group aged> 36 years were 32 people (54.2%), as well as respondents in the control group aged> 36 years as many as 31 people (52.5%).

Table 1. *Age Frequency Distribution of Respondents by Age in Medan Exemplary Puskesmas Period January 2019-September 2019 (n = 118)*

| No | Age | Syphilis (Cases) | | Non- Syphilis (Control) | |
|---|---|---|---|---|---|
| | | n=59 | %(100) | n=59 | %(100) |
| 1. | <36 Years | 27 | 45,8 | 28 | 47,5 |
| 2. | ≥36 Years | 32 | 54,2 | 31 | 52,5 |

**Education**. Based on the level of education, the majority of respondents in the case group with high education (SMA / PT) were 48 people (81.4%), as well as in the majority control group with high education (SMA / PT) as many as 57 people (96.6%).

Table 2. *Distribution of Respondents Frequency Based on Education in Medan Exemplary Health Centers in the January 2019-September 2019 Period (n = 118)*

| No | Education | Syphilis (Cases) | | Non- Syphilis (Control) | |
|---|---|---|---|---|---|
| | | n=59 | %(100) | n=59 | %(100) |
| 1. | Low (SD/SMP) | 11 | 18,6 | 2 | 3,4 |
| 2. | High (SMA/PT) | 48 | 81,4 | 57 | 96,6 |

**History of syphilis in the case group and control group**. Based on the results of the study showed that in the case group respondents, most of them had no history of syphilis as many as 47 people (79.7%), a small proportion there was a history of syphilis as many as 12 people (20.3%). Likewise, the majority of respondents in the control group did not have a history of syphilis as many as 58 people (98.3%), a small proportion there was a history of syphilis as much as 1 person (1.7%).

Table 3. *Distribution of Respondents Based on History of Syphilis in Medan Exemplary Health Centers January 2019-September 2019 (n = 118)*

| No. | The History of Syphilis | Syphilis (Cases) | | Non - Syphilis (Control) | |
|---|---|---|---|---|---|
| | | f | % | f | % |
| 1. | Exist | 12 | 20,3 | 1 | 1,7 |
| 2. | Non-exist | 47 | 79,7 | 58 | 98,3 |
| | **Amount** | **59** | **100,0** | **59** | **100,0** |

**Use of condoms in the case and control groups**. Based on the results of the study showed that in the case group respondents, most routinely used condoms as many as 33 people (55.9%), a small portion rarely used condoms as many as 26 people (44.1%). Likewise, respondents in the control group mostly routinely used condoms as many as 56 people (94.9%), a small number rarely used condoms as much as 3 people (5.1%).

Table 4. *Distribution of Respondents Based on Condom Use in Medan Exemplary Health Centers in the January 2019-September 2019 Period (n = 118)*

| No. | Condom Uses | Syphilis (Cases) | | Non- Syphilis (Control) | |
|---|---|---|---|---|---|
| | | f | % | f | % |
| 1. | Routine | 33 | 55,9 | 56 | 94,9 |
| 2. | Rarely | 26 | 44,1 | 3 | 5,1 |
| | **Amount** | **59** | **100,0** | **59** | **100,0** |

**Injecting drug use in the case and control groups**. Based on the results of the study showed that in the case group respondents, the majority did not use injecting drugs as many as 39 people (66.1%), a small proportion used injecting drugs as many as 20 people (33.9%). Likewise, the majority of respondents in the control group did not use injecting drugs as many as 51 people (86.4%), a small proportion used injecting drugs as many as 8 people (13.6%).

Table 5. *Distribution of Respondents Based on Injecting Drug Use in Medan Exemplary Health Centers in the January 2019-September 2019 Period (n = 118)*

| No. | Injecting drug use | Syphilis (Cases) | | Non- Syphilis (Control) | |
|---|---|---|---|---|---|
| | | f | % | f | % |
| 1. | Yes | 20 | 33,9 | 8 | 13,6 |
| 2. | Not | 39 | 66,1 | 51 | 86,4 |
| | **Amount** | **59** | **100,0** | **59** | **100,0** |

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**Number of sexual partners in the case and control groups**. Based on the results of the study showed that the case group respondents, most of the number of sexual partners ≥1 people as many as 30 people (50.8%), a small number of sexual partners 1 person as many as 29 people (49.2%). Likewise, respondents in the control group were mostly sexual partners with 1 person (55.2%), a small proportion of sexual partners ≥1 were 4 people (6.8%).

Table 6. *Distribution of Respondents by Number of Sexual Couples in Medan Exemplary Health Centers in the January 2019-September 2019 Period (n = 118)*

| No. | Number of sexual partners | Syphilis (Cases) | | Non - Syphilis (Control) | |
|---|---|---|---|---|---|
| | | f | % | f | % |
| 1. | 1 Person | 29 | 49,2 | 55 | 93,2 |
| 2. | ≥1 Person | 30 | 50,8 | 4 | 6,8 |
| **Amount** | | **59** | **100,0** | **59** | **100,0** |

**Bivariate Analysis**

**Effect of age on the occurrence of syphilis in men of childbearing age**. The results showed that in the control group with age <36 years were 28 people (23.7%) while those aged> 36 years were 31 people (26.3%). Case group with age <36 years were 27 people (22.9%), while those aged> 36 years were 32 people (27.1%).

Table 7. *Effect of Age on the Occurrence of Syphilis in Productive Age Men in Medan Exemplary Health Center Period January - September 2019*

| No | Ages | Syphilis Desease | | | | *p-value* | OR (CI95%) |
|---|---|---|---|---|---|---|---|
| | | Syphilis (Cases) | | No - Syphilis (Control) | | | |
| | | f | % | f | % | | |
| 1 | <36 | 27 | 22,9 | 28 | 23,7 | 1,000 | 0,934 (0,453-1,926) |
| 2 | ≥36 | 32 | 27,1 | 31 | 26,3 | | |
| **Amount** | | **59** | **50,0** | **59** | **50,0** | | |

**The influence of education on the occurrence of syphilis in men of childbearing age**. The results showed that in the control group with low education (SD / SMP) as many as 2 people (1.7%) while higher education (SMA / PT) as many as 57 people (48.3%). The case group with low education (SD / SMP) was 11 people (9.3%), while the higher education (SMA / PT) was 48 people (40.7%).

Table 8. *Effects of Education on the Occurrence of Syphilis in Productive Age Men in the Period of January September 2019*

| No | Education | Syphilis Disease | | | | *p-value* | OR (CI95%) |
|---|---|---|---|---|---|---|---|
| | | Syphilis (Cases) | | Non- Syphilis (Control) | | | |
| | | f | % | f | % | | |
| 1 | Low(SD/SMP) | 11 | 9,3 | 2 | 1,7 | 0,016 | 6,531 (1,380-30,920) |
| 2 | High (SMA/PT) | 48 | 40,7 | 57 | 48,3 | | |
| | **Amount** | **59** | **50,0** | **59** | **50,0** | | |

**The influence of syphilis / STI history on syphilis in men of childbearing age**. The results showed that in the case group there was a history of syphilis / STI as many as 12 people (10.2%), while those with no history of syphilis / STI as many as 47 people (39.8%). The control group with a history of syphilis / STI was 1 person (0.8%) while there was no history of syphilis / STI of 58 people (49.2%).

Table 9 *ffects of History of Syphilis / STI on the Occurrence of Syphilis in Productive Age Men in the Period of January September 2019*

| No | The History of Syphilis/IMS | Sifilis Disease | | | | *p-value* | OR (CI95%) |
|---|---|---|---|---|---|---|---|
| | | Syphilis (Cases) | | Bukan Syphilis (Control) | | | |
| | | f | % | f | % | | |
| 1 | Exist | 12 | 10,2 | 1 | 0,8 | 0,002 | 14,809 (1,858-118,055) |
| 2 | Non-Exist | 47 | 39,8 | 58 | 49,2 | | |
| | **Amount** | **59** | **50,0** | **59** | **50,0** | | |

**Multivariate Analysis**

To analyze the effect of the occurrence of syphilis simultaneously multivariate data analysis using multiple logistic regression tests (multiple logistic regression) through several steps:

a. Select potential variables to be included as model candidates. The variables chosen as candidates are variables that have significant value.
b. In this modeling, the candidate variables are the variables that have p <0.25 in the bivariate analysis (chi-square test) which are entered together in multivariate analysis. The use of 0.25 statistical significance as a requirement in

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multiple logistic regression tests to enable variables that are in fact substantially very important to be included in the multivariate model.

c. Based on the results of bivariate analysis, the variables that can be used as model candidates in the multiple logistic regression test in this study because they have a significant value <0.25 are 6 variables namely education (p = 0.016), history of syphilis (p = 0.002), condom use (p = 0.001), injecting drug use (p = 0.016), number of sexual partners (p = 0.001) and sex of sexual partners (p = 0.032). While the age variable (p = 1,000) does not include a model candidate because it has a significant value> 0.25.
d. Next, a multiple logistic regression test is carried out simultaneously with the forward conditional method to identify the variables that most influence the occurrence of syphilis in men of productive age. The forward conditional method is to enter the variables one by one from the results of the correlating variables and meet the statistical significance criteria to enter the model, until all the variables that meet the criteria are included in the model. The variables that enter the first time are the variables that have the largest partial correlation with the dependent variable and that meet certain criteria to be able to enter the model.

The results of multiple logistic regression tests show that as many as 3 variables that influence the occurrence of syphilis in men of productive age are history of syphilis, condom use, and number of sexual partners. More can be seen in the following table.

*Table 14 Results of Multiple Logistic Regression Tests*

| Variable | B | Sig. | Exp(B) | 95%CI for Exp(B) |
|---|---|---|---|---|
| Syphilis History/IMS | 2,748 | 0,013 | 15,616 | 1,790-46,200 |
| Condom Uses | 1,818 | 0,012 | 6,158 | 1,483-25,565 |
| Number of Sexual Pattern | 1,944 | 0,003 | 6,990 | 1,972-24,773 |
| Constanta | -1,021 | 0,001 | | |

The most influential variable in this study is the history of syphilis / STI variable which has a value of Exp (B) / OR = 15.616 meaning that men who have a history of syphilis / STI, have a chance of experiencing syphilis by 15.6 times higher than men men with no history of syphilis / STI.

Variable number of sexual partners has a value of Exp (B) / OR = 6.990 meaning that men who have a sexual partner> 1 person, have a chance of experiencing syphilis by 6.9 times higher than men who have a sexual partner of 1 person (wife ).
The condom use variable has a value of Exp (B) / OR = 6.158 meaning that men who rarely use condoms, have a chance of experiencing syphilis by 6.1 times higher than men who routinely use condoms.

Based on the results of the multiple logistic regression tests also showed variables that did not affect the occurrence of syphilis because they had a significant value> 0.05 were educational variables (p = 0.222), injecting drug use (p = 0.585) and partner sex (p = 0.202 ). More can be seen in the following table 4.16.

*Table 15 Results of Significant Multiple Logistic Regression Tests*

| No. | Variable | Sig. *(p-value)* |
|---|---|---|
| 1. | Education | 0,222 |
| 2. | Injectio Drug Uses | 0,585 |
| 3. | Gender of Sexual Patterns | 0,202 |

**CONCLUSION**

Based on the results of research conducted and presented in the previous chapter, it can be concluded as follows:

1. History of syphilis / STI, condom use, number of sexual partners influences the occurrence of syphilis in men of childbearing age (25-49 years old) in Medan Teladan Health Center for the period January 2019-September 2019.
2. Age, education, injecting drug use, sex of sexual partners do not affect the occurrence of syphilis in men of productive age (25-49 years) in the Medan Health Center in the period January 2019-September 2019.

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The most dominant variable influencing the occurrence of syphilis in men of productive age (25-49 years) in the Medan Exemplary Health Center in the period January 2019-September 2019 is the history of syphilis / STI. Men of childbearing age who have a history of syphilis / STI have a 15.6 times higher chance of developing syphilis compared to men with no history of syphilis / STI.

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