

## Analysis of Risk Factors for the Incidence of Sexually Transmitted Infections of Gonorrhea in Male Patients at Hitam Putih Clinic in Gorontalo

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**ABSTRACT:** Gonorrhea is a sexually transmitted infection (STI) that occurs most frequently throughout the world every year and is the second most common infection caused by bacteria. This study aimed to analyze the risk factors including education, employment, marital status, alcohol consumption status, sexual practices history, condom use behavior, and the most dominant risk factors for the incidence of sexually transmitted infections (STIs) of Gonorrhea in male patients at the Hitam Putih Clinic in Gorontalo. The research design employed was an analytical observational approach with a case-control design. The sample in this study comprised 33 male patients with gonorrhea and 66 male control patients with non-gonorrhea, matched based on patients' age. Data were analyzed using Odds Ratio (OR) with a 95% Confidence Interval (CI) in the Mantel-Haenszel test. If the OR value was  $> 1$  and the p-value was  $\leq \alpha$  (0.05), it meant that the factor increased the risk. Factors include educational background (OR=1.963; p=0.120), employment status (OR=3.077; p=0.01), marital status (OR=2.870; p=0.02), alcohol consumption status (OR=4.080; p=0.03), sexual practices history (OR=21.350; p=0.000), condom use behavior (OR=4.389; p=0.007) were risk factors for gonorrhea, where sexual practices history (OR=35.704; p=0.000) stood out as the most dominant risk factor. Therefore, those variables represented significant risk factors for the occurrence of Gonorrhea among male patients in the Hitam Putih Clinic in Gorontalo. Educational background, employment status, marital status, alcohol consumption status, sexual practices history, and condom use behavior are the risk factors of gonorrhea where the sexual practices history stands out as the most dominant risk factor.

**KEYWORDS:** Risk factors, Gonorrhea, STIs, Patients, Male

### INTRODUCTION

Sexually Transmitted Infections (STIs) are environmental-based diseases caused by bacteria, viruses, or protozoa, where the disease is transmitted through sexual intercourse, either through the vagina, mouth, or anus. The disease is found in many countries and nearly 500 million new cases of STI occur each year worldwide (*National Health Service. Gonorrhoea*, 2018).

STIs cause reproductive morbidity worldwide. In 2019, the Centers for Disease Control and Prevention (CDC) in the United States reported an almost 30% increase in chlamydia, gonorrhea, and syphilis between 2015 and 2019, with a rise in the incidence of all STIs for six consecutive years (*Centers for Disease Control*, 2022). According to data from WHO in 2020, there are more than 1 million cases of sexually transmitted infections occurring every day throughout the world and most of these infections do not show symptoms. It is estimated that there are at least 374 million new infections, including chlamydia (129 million), gonorrhea (82 million), syphilis (7.1 million), and trichomoniasis (156 million) (*World Health Organization*, 2022).

Gonorrhea has been identified as the predominant sexually transmitted infection throughout the 20th century, with an estimated annual incidence of 200 million new cases globally, and it stands as the second most prevalent cause of bacterial sexually transmitted diseases worldwide. (*Centers for Disease Control*, 2022). Gonorrhea poses a substantial public health concern due to escalating diagnosis rates globally. According to data from the World Health Organization (WHO), approximately 106 million new cases of gonorrhea are reported in adults annually worldwide. (*World Health Organization*, 2022).

In Indonesia, the number of cases of gonorrhea in adult men is around 5.6 per 100,000. This figure positions Indonesia to occupy the second highest position in Southeast Asia after Thailand. (*World Health Organization*, 2016). Based on the report on the progress of HIV/AIDS and Sexually Transmitted Infections (STIs) in Indonesia for the first quarter of 2022, the number of STI cases based on laboratory examination approaches are as follows: cervicitis proctitis by 4,286 cases, early syphilis by 3,272 cases, gonorrhea by 1,877 cases, advanced syphilis by 920 cases, trichomoniasis by 272 cases, genital herpes by 254 cases, and non-gonococcal urethritis by 73 cases. (Indonesian Ministry of Health, 2023).

Hitam Putih Clinic in Gorontalo is a health service facility providing specialized services focusing on dermatology and

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genitourinary care. According to a preliminary study conducted between 2021 and 2023, the number of gonorrhea cases among men increased significantly. Initially, there were 30 cases in 2021, which rose to 32 cases in 2022, and further increased to 40 cases in 2023. The rise in gonorrhea cases among men attending the clinic is believed to stem from various factors, including social demographics. Factors such as education level, employment status, marital status, and economic situation are thought to influence behaviors that can lead to gonorrhea transmission. Some gonorrhea patients are self-employed, laborers and students. This phenomenon may arise due to individuals in these occupations having more leisure time compared to civil servants, which may lead them to seek sexual encounters with non-regular partners. Additionally, alcohol consumption history can lead to impulsive sexual behaviors and unsafe practices, thereby increasing the risk of gonorrhea transmission. Furthermore, engaging in multiple sexual partnerships and inconsistent condom use further contribute to the heightened risk of gonorrhea among male patients seeking treatment at the clinic. (Hitam Putih Klinik, 2023).

The incidence of STIs continues to rise annually, impacting various aspects of Indonesian society. Despite various prevention efforts, the outcomes remain unsatisfactory as the number of cases continues to escalate. Given these circumstances and drawing from prior research conducted in Indonesia, researchers are motivated to explore the underlying risk factors for the sexually transmitted infection of gonorrhea in male patients at the Hitam Putih Clinic in Gorontalo.

### **RESEARCH DESIGN**

This research was analytic observational research with a case-control study design (hospital-based case-control study). In this study, the incidence of gonorrhea was used as the dependent variable while educational background, employment status, marital status, alcohol consumption status, sexual practices history, and condom use behavior were used as independent variables. This research was carried out at the Hitam Putih Clinic in Gorontalo.

The population in this study were all male patients with indications of gonorrhea or non-gonorrhea either gonorrhea or non-gonorrhea seeking treatment at the Clinic between 2022 and 2023. The minimum required sample size was determined using the binomial proportions formula (Lemeshow formula). The calculation of the sample size was based on either the smallest Odds Ratio (OR) value or estimated proportions. (Ratna, 2019). The samples taken met the inclusion and exclusion criteria with a ratio of the number of samples in the case and control groups of 1: 2. Thus, the group with sexually transmitted infection of gonorrhea was 33 cases and the group without sexually transmitted infection of gonorrhea was 66 cases and matching was carried out on the patient's age, thus the total sample size was 99 patients. The sampling technique was conducted using purposive sampling, whereby specific criteria were determined in line with the research objectives to address the research questions. The primary data in this study were obtained directly at the research site through interviews with patients, while secondary data were acquired directly from the clinic's monthly register. Data were analyzed using univariate, bivariate, and multivariate methods.

### **STATISTICAL METHODS**

The univariate analysis involved describing the risk factors for gonorrhea occurrence among male patients through frequency distribution tables. Bivariate analysis used Odds Ratio (OR), representing the ratio of odds between the exposed and unexposed groups, with a 95% Confidence Interval (CI) in the Mantel-Haenszel test. If  $OR > 1$ , it indicated a risk factor; if  $OR < 1$ , it indicated a protective factor; if  $OR = 1$ , it indicated no risk factor.

Multivariate analysis was conducted using binary logistic regression analysis, where the importance of each variable was assessed based on its Odds Ratio (OR)/Exp B value. The larger the OR/Exp B value of a variable, the more dominant its risk factor. To test whether the null hypothesis ( $H_0$ ) is accepted or rejected, the regression coefficient "b" parameter was examined using the Wald test. If the null hypothesis is rejected, it is necessary to determine whether the OR value is  $> 1$  or  $< 1$ . If the OR value is  $> 1$  and the p-value  $\leq \alpha$  (0.05), it indicates that the factor increases the risk. Conversely, if the OR value is  $< 1$  and the p-value  $> \alpha$  (0.05), it suggests that the factor decreases the risk or has a preventive effect. (Hiola, Rama.,dkk, 2014).

### **ETHICS**

During data collection, the author provided a consent form outlining the research's purpose, objectives, and potential risks. The statements within this form were formulated to be clear and easily comprehensible, ensuring that respondents understood the research procedures. Respondents were given the option to voluntarily complete and sign the consent form. To uphold confidentiality, the researcher coded respondents' identities without disclosing their names. Research data were reported in aggregate form rather than on an individual basis. Importantly, no coercion or undue pressure was exerted by the researcher on the respondents, either directly or indirectly, throughout the study.

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## RESULTS

This research involved a sample of 99 respondents, consisting of 33 case samples and 66 control samples. The following are the results of data analysis from 99 respondents.

### A. UNIVARIATE ANALYSIS

#### 1. Description of Gonorrhoea Sexually Transmitted Infection

**Table 1. Frequency Distribution of Gonorrhoea Incidents at the Hitam Putih Clinic in Gorontalo**

Gonorrhoea Incidence	Frequency	Percentage (%)
Gonorrhoea	33	33.3
Non-gonorrhoea	66	66.7

*Source: Primary Data*

The data presented in Table 4.1 shows that of the 99 male patients seeking treatment at the Clinic, 33 patients (33.3%) had gonorrhoea and 66 patients (66.7%) did not have gonorrhoea.

#### 1. Description of Risk Factors of Gonorrhoea

**Table 2. Frequency Distribution of Gonorrhoea Risk Factors at the Hitam Putih Clinic in Gorontalo**

Risk Factors	Frequency	Percentage (%)
<b>Educational Background</b>		
Low	49	49.5
High	50	50.5
<b>Employment Status</b>		
Employed	48	48.5
Unemployed	51	51.5
<b>Marital Status</b>		
Married	46	46.5
Unmarried	53	53.5
<b>Alcohol Consumption Status</b>		
Drinker	33	33.3
Non-drinker	66	66.7
<b>Sexual Practices History</b>		
High-risk	26	26.3
Low-risk	73	73.3
<b>Condom Use Behaviour</b>		
Consistent	65	65.3
Inconsistent	34	34.7

*Source: Primary Data*

The data presented in Table 2 shows that respondents with a low educational background were 49.5%; employed 48.5%; and unmarried 46.5%. Meanwhile, respondents with alcohol status as drinkers by 33.3%, high-risk sexual practices by 26.3%; and consistent use of condom by 65%.

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## 2. BIVARIATE ANALYSIS

### a. Educational Background

In Table 3, data is presented regarding the relationship between risk factors and Gonorrhoea at the Hitam Putih Clinic in Gorontalo. In terms of educational background, based on the statistical test results, showed that the Mantel Haenszel Odds Ratio (OR) value was 1.963, where  $OR > 1$ . The OR value of 1.963 for this variable was statistically significant because the OR value was between the 95% CI values ( $0.838 < OR < 4.596$ ) with the resulting Asymptotic Significance (2-sided) p-value of 0.120 ( $p < 0.05$ ). It indicated that the tendency for patients with a low educational background to be infected with Gonorrhoea was 1.9 times higher compared to patients with a high educational background.

### b. Employment Status

Based on the data presented in Table 3, in terms of the relationship between employment status and incident of gonorrhoea, based on the statistical test results, it showed that the Mantel Haenszel Odds Ratio (OR) value was 3.077, where  $OR > 1$ . The OR value of 3.077 for this variable was statistically significant because the OR value was between the 95% CI values ( $1.281 < OR < 7.390$ ) with the resulting Asymptotic Significance (2-sided) p-value of 0.012 ( $p < 0.05$ ). It indicated that the tendency for patients with employed status to be infected with Gonorrhoea was 3 times compared to patients with unemployed status.

### c. Marital Status

Based on the data presented in Table 3, in terms of the relationship between marital status and incident of gonorrhoea, based on the statistical test results, it showed that the Mantel Haenszel Odds Ratio (OR) value was 2.870, where  $OR > 1$ . The OR value of 2.870 for this variable was statistically significant because the OR value was between the 95% CI values ( $1.207 < OR < 6.825$ ) with the resulting Asymptotic Significance (2-sided) p-value of 0.017 ( $p < 0.05$ ). It indicated that the tendency for patients with unmarried status to be infected with Gonorrhoea was 2.8 times compared to patients with married status.

### d. Alcohol Consumption Status

Based on the data presented in Table 3, in terms of the relationship between alcohol consumption status and incident of gonorrhoea, based on the statistical test results, it showed that the Mantel Haenszel Odds Ratio (OR) value was 4.080, where  $OR > 1$ . The OR value of 4.080 for this variable was statistically significant because the OR value was between the 95% CI values ( $1.667 < OR < 9.985$ ) with the resulting Asymptotic Significance (2-sided) p-value of 0.002 ( $p < 0.05$ ). It indicated that the tendency for drinker patients to be infected with Gonorrhoea before sexual intercourse was 4.0 times compared to non-drinker patients before sexual intercourse.

**Table 3. Analysis Results of the Relationship between Risk Factors and the Incidence of Gonorrhoea at the Hitam Putih Clinic in Gorontalo**

Risk Factors	Incidence of Gonorrhoea						OR (95% CI) LB-UB
	Gonorrhoea		Non-gonorrhoea		Total		
	n	%	n	%	N	%	
<b>Education</b>							1.963
Low	20	40.8	29	59.2	49	100	0.838 – 4.596
High	13	26.0	37	74.0	50	100	
<b>Employment Status</b>							3.077
Employed	22	45.8	26	54.2	48	100	81 – 7.390
Unemployed	11	21.6	40	78.4	51	100	
<b>Marital Status</b>							2.870
Unmarried	21	45.7	25	54.3	46	100	1.207 – 6.825
Married	12	22.6	41	77.4	53	100	
<b>Alcohol Consumption Status</b>							4.080
Drinker	18	54.5	15	45.4	33	100	1.667 – 9.985
Non-drinker	15	22.7	51	77.3	66	100	
<b>Sexual Practices History</b>							21.350
High-risk	21	80.8	5	19.2	26	100	6.726 – 67.774
Low-risk	12	16.4	61	83.6	73	100	
<b>Condom Use Behaviour</b>							4.389
Consistent	28	43.1	37	56.9	52	100	1.508 – 12.777
Inconsistent	5	14.7	29	85.3	47	100	

Source: Primary Data

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## e. Sexual Practices History

Based on the data presented in Table 3, in terms of sexual practices history of the respondents with Gonorrhoea seeking treatment at the Hitam Putih Clinic, based on the statistical test results, it showed that the Mantel Haenszel Odds Ratio (OR) value was 21.350, where  $OR > 1$ . The OR value of 21.350 for this variable was statistically significant because the OR value was between the 95% CI values ( $6.726 < OR < 67.774$ ) with the resulting Asymptotic Significance (2-sided)  $p$ -value of 0.000 ( $p < 0.05$ ). It indicated that the tendency for patients with high-risk sexual practices to be infected with Gonorrhoea was 21.3 times compared to the patients with low-risk sexual practices.

## f. Condom Use Behaviour

Based on Table 3, in terms of the relationship between condom use behaviour and the incident of gonorrhoea, based on the statistical test, it showed that the Mantel Haenszel Odds Ratio (OR) value was 4.389, where  $OR > 1$  with the resulting Asymptotic Significance (2-sided)  $p$ -value of 0.007 ( $p < 0.05$ ), meaning that the odds ratio of 4.389 was significant or meaningful, thus the condom use behavior was a risk factor for the incidence of gonorrhoea. The OR value of 4.389 for this variable was statistically significant because the OR value was between the 95% CI values ( $1.508 < OR < 12.777$ ), meaning that the tendency for patients with inconsistent use of condom during sexual intercourse to be infected with Gonorrhoea was 4.3 times compared to patients with consistent use of condom during sexual intercourse.

## 4. MULTIVARIATE ANALYSIS

The results of the logistic regression analysis and the results of the hypothesis test are presented in Table 4.

Based on the logistic regression analysis presented in Table 4, the interpretation of the odds ratio or probability ratio is as follows:

1. The regression coefficient value for the education variable was 0.406 with an OR value of 2.445. This meant that for every new male patient with low education, the chance of being infected with gonorrhoea in male patients was 2.4 times, assuming the other independent variables were held constant. The significance value of the resulting  $p$ -value was 0.118 ( $p > 0.05$ ) or  $H_0$  was accepted, which meant that partially education did not significantly influence the incidence of gonorrhoea.

**Table 4. Logistic Regression Coefficient Test Results and Hypothesis Test Results**

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 <sup>a</sup>	Education	.406	.866	.220	1	.118	2.445
	Employment	-18.505	1.951	.000	1	.014	8.086
	Marital	-.480	8.1053	.000	1	.015	6.513
	Alcohol	-17.388	9.5583	.000	1	.002	10.023
	Sexual	39.425	1.2534	.000	1	.000	55.434
	Condom	1.113	.710	1.709	1	.004	6.851
	Constant	-6.239	1.699	13.489	1	.000	.002
a. Variable(s) entered on step 1: Education, Employment, Marital, Alcohol, Sexual, Condom.							
source: Primary Data 2023							

2. The regression coefficient value for the education variable was -18.505 with an OR value of 8.086. This meant that for every new male patient with employed status, the chance of being infected with gonorrhoea in male patients was 8 times, assuming the other independent variables were held constant. The significance value of the resulting  $p$ -value was 0.014 ( $p > 0.05$ ) or  $H_0$  was rejected, which meant that partially employment status significantly influenced the incidence of gonorrhoea.
3. The regression coefficient value for the marital status variable was -0.480 with an OR value of 6.513. This meant that for every new male patient with married status, the chance of being infected with gonorrhoea in male patients was 6.5 times, assuming the other independent variables were held constant. The significance value of the resulting  $p$ -value was 0.015 ( $p > 0.05$ ) or  $H_0$  was rejected, which meant that partially marital status significantly influenced the incidence of gonorrhoea.
4. The regression coefficient value for the alcohol consumption status variable was -17.388 with an OR value of 10.023. This meant that for every new male patient with drinker status, the chance of being infected with gonorrhoea in male patients was 10 times, assuming the other independent variables were held constant. The significance value of the resulting  $p$ -value was 0.002 ( $p > 0.05$ ) or  $H_0$  was rejected, which meant that partially alcohol consumption status significantly influenced the incidence of gonorrhoea.

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- The regression coefficient value for the sexual practices history variable was 39.425 with an OR value of 55.434. This meant that for every new male patient with the high-risk level of sexual practices, the chance of being infected with gonorrhea in male patients was 55.4 times, assuming the other independent variables were held constant. The significance value of the resulting p-value was 0.000 ( $p > 0.05$ ) or  $H_0$  was rejected, which meant that partially sexual practices history significantly influenced the incidence of gonorrhea.
- The regression coefficient value for the condom use behaviour variable was 1.113 with an OR value of 6.851. This meant that for every new male patient with inconsistent use of condom during sexual intercourse, the chance of being infected with gonorrhea in male patients was 6.8 times, assuming the other independent variables were held constant. The significance value of the resulting p-value was 0.004 ( $p > 0.05$ ) or  $H_0$  was rejected, which meant that partially condom use behavior significantly influenced the incidence of gonorrhea.

To identify the most dominant risk factors among each independent variable in the binary logistic regression analysis, further regression testing was conducted on five significant variables associated with gonorrhea infection events, as depicted in Table 5.

Based on the results presented in Table 5, the risk factors ordered from the most dominant and significant values are as follows.

- The OR value of the sexual practices history variable was 35.704 ( $OR > 1$ ), meaning that this variable contributed 35.7 times to the incidence of gonorrhea in male patients. The resulting p-value was 0.000 ( $p < 0.05$ ) or  $H_0$  was rejected, meaning that the sexual practices history significantly influenced the incidence of gonorrhea.
- The OR value of the variable of alcohol consumption status was 8.952 ( $OR > 1$ ), meaning that this variable contributed 8.9 times to the incidence of gonorrhea in male patients. The resulting p-value was 0.000 ( $p < 0.05$ ) or  $H_0$  was rejected, meaning that the alcohol consumption status significantly influenced the incidence of gonorrhea.
- The OR value of the variable of employment status was 6.551 ( $OR > 1$ ), meaning that this variable contributed 6.5 times to the incidence of gonorrhea in male patients. The resulting p-value was 0.000 ( $p < 0.05$ ) or  $H_0$  was rejected, meaning that the employment status significantly influenced the incidence of gonorrhea.
- The OR value of the variable of condom use behavior was 6.531 ( $OR > 1$ ), meaning that this variable contributed 6.5 times to the incidence of gonorrhea in male patients. The resulting p-value was 0.004 ( $p < 0.05$ ) or  $H_0$  was rejected, meaning that the condom use behavior significantly influenced the incidence of gonorrhea.
- The OR value of the variable of marital status was 5.868 ( $OR > 1$ ), meaning that this variable contributed 5.8 times to the incidence of gonorrhea in male patients. The resulting p-value was 0.000 ( $p < 0.05$ ) or  $H_0$  was rejected, meaning that the marital status significantly influenced the incidence of gonorrhea.

Therefore, based on the testing results, the sexual practice history variable was the most dominant and significant risk factor for the incidence of Gonorrhea in male patients.

**Table 5. Logistic Regression Testing Results on Five Significant Variables**

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 2 <sup>a</sup>	Employment	.782	1.4504	.000	1	.000	6.551
	Marital	-21.819	1.4674	.000	1	.000	5.868
	Alcohol	-17.036	8.2763	.000	1	.000	8.952
	Sexual	39.425	1.0634	.000	1	.000	35.704
	Condom	3.235	.852	1.709	1	.004	6.513
	Constant	-2.393	1.699	11.639	1	.000	.001
a. Variable(s) entered on step 2: Employment, Marital, Alcohol, Sexual, Condom.							
<i>Source: Primary Data 2023</i>							

## DISCUSSION

### 1. Educational Background

Based on the research results, in terms of the educational background of the respondents, it showed that as many as 20 patients with low educational backgrounds were infected with gonorrhea (40.8%) while 29 patients with high educational backgrounds were not infected with gonorrhea (59.2%). The Odds Ratio (OR) value of 1.963 was deemed significant, with  $OR > 1$  indicating that educational background is a risk factor for the incidence of Gonorrhea.

Based on the statistical analysis of the data collected in this study, it was found that the proportion of Gonorrhea incidents

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among patients with lower education levels in the case group was higher compared to those with higher education levels. Specifically, 20 individuals, or 60.6% of the case group, had low education levels. The results obtained from the field research indicated that patients often exhibited indifference towards the risks associated with STIs, despite being aware of the potential consequences of engaging in risky sexual behavior. Through interviews with patients, researchers discovered that some individuals believed gonorrhea could be cured simply by taking medication. Consequently, even individuals with higher levels of education may not necessarily adopt healthy sexual practices or utilize effective methods to prevent the transmission of gonorrhea.

The results of this study are in line with research by Joisnari (2015) regarding the relationship between educational background and the incidence of sexually transmitted infections in adolescents, where patients with low education are at risk of sexually transmitted infections. Lower levels of education are linked to a higher likelihood of contracting sexually transmitted infections (STIs), while higher education reduces this risk. Education equips individuals with knowledge about STIs and how to prevent them. Therefore, people with higher education levels tend to grasp STI prevention methods more readily, enhancing their awareness and ability to prevent and treat them. (Nari, 2015). Meanwhile, the results of research conducted by Ayu (2019) show that there is no relationship between education and the incidence of STIs, even though in this study, the number of respondents infected with STIs with low education was greater than respondents with higher education. (Ayu & Susanto, 2019).

Education is not the only way to prevent STIs, but rather by increasing knowledge about reproductive health and increasing knowledge about risk factors that can increase the occurrence of STIs. Education level does not have a significant impact on the occurrence of STIs. Nonetheless, it's important to acknowledge that education level plays a role in accessing information and understanding about STIs. It is easier for someone with a higher education to find or gain access to fulfilling their sexual needs compared to someone with a low education.

### **2. Employment Status**

Through the results of this study, data was obtained that patients with employed status were infected with gonorrhea, namely 22 people (45.8%) while patients with employed status who were not infected with gonorrhea were 26 people (54.2%). The Odds Ratio (OR) value obtained for this variable was 3.077, meaning the tendency for patients with employed status to be infected with gonorrhea was 3 times compared to patients with unemployed status. This Odds Ratio (OR) value of 3.077 was deemed significant, with  $OR > 1$  indicating that employment status is a risk factor for the incidence of Gonorrhea.

In this study, employment status is one of the risk factors that influences the incidence of gonorrhea. Statistically, based on data obtained through this research, the proportion of gonorrhea incidents in patients with employed status in the case group was greater than in patients with unemployed status, namely 22 people or 66.7%. The types of work of the respondents in this study were drivers, entrepreneurs, laborers, and employees, and some of them were students, of which there were quite a lot of respondents who worked as entrepreneurs. Entrepreneurs have more leisure time and resources compared to other jobs, thus they have a greater opportunity to visit places of prostitution. The profession of being a driver also entails high mobility, often requiring individuals to travel outside the city, thereby providing opportunities to seek outlets for their sexual needs with other partners. Meanwhile, there are also those who are students, who ideally should not engage in sexual relations. This is influenced by adolescents who constantly seek more information about sex from various sources such as peers, books, or watching films, and even experimenting through activities like masturbation and petting.

The results of this research are in line with the Health Belief Model theory (2008) which states that a variety of sociodemographic and economic characteristics are likely to influence perceptions and indirectly influence behavior. Apart from that, one of the determinant factors that also determines the frequency and distribution of a disease in a society is the host factor, namely employment status. Employment status often has a close relationship with the possibility of being infected with an STI. In people who work under certain conditions and environments that provide opportunities for sexual contact, the possibility of being infected with sexually transmitted diseases increases. ( Indonesian Ministry of Health, 2016).

The results of this research are supported by the results of research conducted (Sari et al., 2021) on truck drivers in the truck base area in the Batang Roban area which shows that the longer they are as truck drivers, the more partners have alternate sexual relations. Meanwhile, the results of research conducted (Naully & Romlah, 2018) showed that 32% of teenagers aged 15-19 years have had sexual relations, even 17% of them have had multiple partners.

### **3. Marital Status**

Through the research results, data was obtained that there were 21 unmarried patients infected with gonorrhea (45.7%) while there were 25 unmarried patients who were not infected with gonorrhea (54.3%). The Odds Ratio (OR) value for the marital status variable in this study showed that the tendency for unmarried patients to be infected with Gonorrhea was 2.8 times compared to married patients. This Odds Ratio (OR) value of 2.870 was deemed significant, with  $OR > 1$  indicating that marital status is a risk factor for the incidence of Gonorrhea

Statistically, the data obtained through this research showed that the proportion of Gonorrhea incidents in unmarried

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patients in the case group was greater than in married patients, specifically 21 people or 63.6%. Further research revealed that Gonorrhea was more common among unmarried individuals, as they had higher sexual needs compared to married individuals, leading to a higher likelihood of engaging in unsafe sexual behavior with partners and risking STI transmission. The incidence of sexually transmitted infections was higher among unmarried, divorced, or separated individuals compared to married individuals.

The results of this research are in line with the results of research conducted by Refti (2018) which showed that there was a relationship between marital status and the incidence of STIs, where referring to chi-square calculations with a confidence level of 0.05, the  $p$ -value was 0.001. The OR result of 5.35 indicated that unmarried patients were 5.35 times more at risk of experiencing STIs than married respondents. (Refti, 2018).

According to the results of research conducted by Muda (2014), the incidence of STIs was higher in people who were unmarried, divorced, or people who were separated from their families compared to married people because their sexual needs were met. Subjects with divorce status tended to have more than one partner so the risk of experiencing STIs was higher. Subjects with married status were also likely to have more than one sexual partner, either for reasons of biological need or entertainment, making them more susceptible to contracting STIs (Dewi Lestari et al., 2018).

This study is in line with the theory that unmarried status provides a greater risk of contracting STIs compared to married respondents. Marital status can influence safe sexual behavior due to more open negotiation with partners regarding condom use before engaging in sexual intercourse (Puspitorini & Lumintang, 2017).

### **4. Alcohol Consumption Status**

Through the results of this study, data was obtained that there were 18 drinker patients infected with gonorrhea (54.5%) while there were 15 drinker patients who were not infected with gonorrhea (45.4%). The OR value of this variable showed that the tendency of drinker patients to be infected with gonorrhea was 4.0 times compared to non-drinker patients before sexual intercourse, meaning that the OR value of 4.080 is significant. The OR value indicates that alcohol consumption status is a risk factor for the incidence of gonorrhea.

Statistically, based on data obtained through this research, the proportion of gonorrhea incidence in drinking patients in the case group was greater than in non-drinker patients, namely 18 people or 54.5%. Based on the results of the interviews, it was discovered that the drinker patients did not only drink one type of alcoholic beverage, but other types of alcohol. This is because there is quite a lot of beer-like alcohol available in the community and its alcohol content is lower compared to other types of alcohol.

Previous research results indicate a statistically significant relationship between alcohol consumption and the risk of STIs. Alcohol consumption tends to escalate impulsive sexual behavior and unsafe sexual practices, consequently elevating the risk of STI transmission. (Taupik et al., 2020).

The results of previous research showed that 69.6% of drinkers engaged in heavy premarital sexual activities such as groping chests, groping genitals, and intercourse; while 26.1% of the drinkers engaged in moderate sexual activities including kissing, including light kissing, deep kissing, necking, petting, or any form of heavy sexual physical contact but not including intercourse; while 4.3% of the drinkers engaged in light sexual activities such as holding hands and kissing cheeks or lips (Refti, 2018).

### **5. Sexual Practices History**

Through the results of this study, data was obtained that 21 patients with high-risk sexual practices were infected with gonorrhea (80.8%) while 5 patients with high-risk sexual practices were not infected with gonorrhea (19.2%). The OR value of this variable showed that the tendency of patients with high-risk sexual practices to be infected with gonorrhea was 21.3 times compared to patients with low-risk sexual practices, meaning that the OR value of 21.350 is significant. The OR value indicates that sexual practices history is a risk factor for the incidence of gonorrhea.

Statistically, based on data obtained through this research, the proportion of gonorrhea incidence in patients with high-risk sexual practices in the case group was greater than in patients with low-risk sexual practices, namely 21 people or 63.6%. Based on the results of the interviews, it was discovered that the majority of gonorrhea cases occurred in patients with a lifestyle of having multiple sexual partners and rarely using condoms during sexual intercourse. One factor that can accelerate the transmission of gonorrhea is the high frequency of commercial sexual contact. The number of commercial sexual contacts can be observed from the frequency of sexual encounters with partners or clients. Such occurrences can support the spread of gonorrhea infection, as having more clients with varying health statuses can potentially transmit the disease to others. Meanwhile, the work environment also significantly influences sexual activities that may trigger an increase in sexually transmitted infections, such as salons where employees are transgender individuals, which can lead to same-sex sexual relationships.

These results are in line with the research results (Refti, 2018) that there is a correlation between risky sexual behavior and the incidence of STIs. Risky sexual behavior includes changing partners frequently, engaging in same-sex intercourse, or having



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sexual relations with someone who has an STI, thereby transmitting it to their other partners, thus posing a high risk of contracting STIs.

### 6. Condom Use Behaviour

Through the results of this study, data was obtained that 28 patients with inconsistent use of condoms were infected with gonorrhoea (43.1%) while 37 patients with inconsistent use of condoms were not infected with gonorrhoea (56.9%). The OR value of this variable showed that the tendency of patients with inconsistent use of condoms to be infected with gonorrhoea was 4.3 times compared to patients with consistent use of condoms, meaning that the OR value of 4.389 is significant. The OR value indicates that condom use behavior is a risk factor for the incidence of gonorrhoea.

Statistically, based on data obtained through this research, the proportion of gonorrhoea incidence in patients with inconsistent use of condoms in the case group was greater than in patients with consistent use of condoms, namely 28 patients or 84.8%. The results of this study align with previous research conducted by Arifin (2012), showing that inconsistent condom use increases the risk of STIs by 1.8 times. This supports the theory that using protection like condoms significantly reduces the risk of STI transmission during sexual intercourse. Ensuring consistent condom use among at-risk groups is crucial for STI prevention efforts. (Fairley et al., 2017).

The research findings also support the theory according to the Mayo Foundation for Medical Education and Research (MFMER) in 2017, that the effectiveness of condom use in preventing sexually transmitted infections is influenced by various factors, one of which is how the condom is used. If condom use is not accompanied by proper usage according to recommended procedures, it can cause damage to the condom, thereby reducing its effectiveness in preventing the transmission of sexually transmitted infections (Szucs et al., 2020).

The findings of this study are consistent with previous research conducted by Satriani (2015) indicating that women of reproductive age with more than one sexual partner are at a 14.1 times higher risk of STI infection compared to those with one or fewer sexual partners. One way to prevent STIs is to engage in sexual relations with only one partner. If someone has multiple sexual partners, they are potentially at risk of contracting STIs. The number of sexual partners increases the chances of unsafe sex, which is a critical factor in STI transmission. (Simbolon & Budiarti, 2020).

### 7. Dominant Risk Factors

Based on the results of the binary logistic regression test analysis, it was found that of the five independent variables, three variables had significant OR values, namely  $OR > 1$ . The most dominant and significant risk factor can be seen from the odds ratio/Exp (B) value and the  $p$ -value  $\leq \alpha$ , hence the order of dominance based on the highest value was sexual practices history ( $OR=35.704$  and sig. value  $0.000 (<0.05)$ ); alcohol consumption status ( $OR=10.023$  and sig. value  $0.002 (<0.05)$ ); employment status ( $OR=6.551$  and sig. value  $0.010 (<0.05)$ ).

Statistically, sexual practices history was the most dominant and significant risk factor in this study. This shows that there is a high risk of sexual intercourse which can lead to the transmission of gonorrhoea. Risky sexual behavior includes changing partners frequently, engaging in same-sex intercourse, or having sexual relations with someone who has already contracted a sexually transmitted disease.

## CONCLUSIONS

Based on the research results, it can be concluded that educational background, employment status, marital status, alcohol consumption status, history of sexual practices, and condom use behavior are risk factors for gonorrhoea. A history of sexual practices is the most dominant risk factor. A more comprehensive approach needs to be implemented to reduce the incidence of gonorrhoea through screening of at-risk populations, effective therapy, education on condom use, and effective management of sexual partners. Future research is open to conducting research based on other aspects that also influence the increasing incidence of Gonorrhoea.

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