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(RESEARCH ARTICLE)

Description of the Level of Knowledge of Pregnant Women on Prevention of Syphilis in Newborns in the City of Surabaya

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Abstract

Background: Congenital syphilis in pregnant women is caused by the bacterium Treponema pallidum and is a chronic and communicable disease that can lead to stillbirth, premature birth, low birth weight, neonatal death, or congenital syphilis (Darmawan *et al.*, 2020). In the United States, between 2013 and 2017, there was a 72.2% rise in the occurrence of primary and secondary syphilis (De Voux *et al.*, 2017). According to the World Health Organization (WHO) for syphilis, the incidence rate has increased by 0.32% in the Asia Pacific region (WHO, 2019). In Indonesia, syphilis cases have increased by 70% in the past five years. Unfortunately, high syphilis cases are still found in major cities in Indonesia, particularly Surabaya. The purpose of this study is to understand the level of knowledge of pregnant women regarding syphilis prevention in newborns in Surabaya.

Methods: This study is an analytical observational study with a cross-section design. The number of respondents involved is 233 people. The inclusion criteria for this study are pregnant women in trimesters 1, 2, and 3 who receive antenatal care at Perak Timur Health Center, Pucang Sewu Health Center, Morokrembangan Health Center, Putat Jaya Health Center, Kalirungkut Health Center, and Tanah Kali Kedinding Health Center in Surabaya during September to October 2023. The exclusion criteria for this study are women with special needs. Data collection was carried out using purposive sampling techniques.

Results: Based on bivariate analysis (Spearman), there is a relationship between education and knowledge with a p-value of 0.435. Bivariate analysis (chi-square) on the relationship between source of information and knowledge has a p-value of 0.669. Bivariate analysis (Spearman) on gravida and knowledge has a p value of 0.116. The relationship between age and knowledge has a p-value of 0.116. The relationship between occupation and knowledge was obtained with a chi-square test with a p-value of 0.535.

Conclusion: There is no relationship between education, source of information, gravida, age, and occupation with knowledge.

Keywords : Syphilis; STD; Knowledge; Pregnant woman; Newborn

1. Introduction

Congenital syphilis in pregnant women is caused by the bacterium Treponema pallidum and is a chronic and communicable disease that can lead to stillbirth, premature birth, low birth weight, neonatal death, or congenital

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syphilis (Darmawan *et al.*, 2020). The different phases of maternal syphilis consist of primary, secondary, early latent (within 12 months), late latent (more than 12 months), and tertiary stages. The transmission of the infection from mother to fetus is possible during any phase of the disease and at any time during pregnancy (Curry *et al.*, 2018). Transmission can also happen during childbirth or through contact with contagious sores in the period after giving birth. Thankfully, the risk to both the mother and the fetus can be eradicated through early detection and timely treatment using benzathine penicillin G (Pham *et al.*, 2022). Congenital syphilis refers to the clinical manifestations that appear in infants within the first two years of age. One of the common findings is an enlargement of the liver and spleen, which can result from either extramedullary hematopoiesis or hepatitis. This condition may take several months to resolve. The rash of congenital syphilis is typically oval-shaped and maculopapular, but it turns copper-colored with desquamation, particularly on the palms and soles. A distinctive fluid-filled, bullous eruption known as pemphigus syphiliticus may also develop with peeling and subsequent crusting and skin wrinkling. The global prevalence of congenital syphilis is further complicated by the high incidence of HIV co-infection among adults because syphilis is recognized as a risk factor for acquiring HIV (Cooper and Sánchez, 2018).

Approximately 6.3% of the global population has sexually transmitted infectious diseases (STIs) such as syphilis, gonorrhea, chlamydia, and trichomoniasis annually (Yosef, 2021). In the United States, between 2013 and 2017, there was a 72.2% rise in the occurrence of primary and secondary syphilis. Specifically in 2017, there was a 10.5% increase (9% among men and 21.2% among women). The surge in cases among women is especially concerning due to the simultaneous rise in congenital syphilis (De Voux *et al.*, 2017). In the Asia Pacific region, STI has become one of the most serious health problems among the population with adverse effects on pregnancy rates that are quite high. According to the World Health Organization (WHO) for syphilis, the incidence rate has increased by 0.32% in the Asia Pacific region (WHO, 2019).

In Indonesia, syphilis cases have increased by 70% in the past five years, from 12,000 cases to almost 21,000 cases annually, with an average increase of 17,000-20,000 cases annually (Kementerian Kesehatan Republik Indonesia, 2023). According to the Surabaya Health Profile in 2018, syphilis was found in Surabaya, with a total of 92 cases. According to a study conducted in Brazil in 2014, from 23,894 women, it was found that the prevalence of syphilis in pregnant women was 1.02%. A higher prevalence was found in women who did not receive antenatal care (ANC) (Domingues *et al.*, 2014). The prevalence range of syphilis in Indonesia among pregnant women is between 26,500 and 159,000 pregnancies annually (Ministry of Health of the Republic of Indonesia, 2015). Neonates born to syphilis-infected mothers who are not treated can result in perinatal mortality rates of up to 40% (Kementerian Kesehatan Republik Indonesia, 2015).

The more information about health that is obtained, the more knowledge is obtained (Petralina, 2020). According to Masni, 2016 knowledge has a major contribution in changing one's behavior to do something both positive and negative. Age will affects a person's ability to catch and think (Masni *et al.*, 2016). This is in accordance with the results of the examination of syphilis in pregnant women at the Pitu Health Center, Halmahera Regency, out of 30 respondents, the results of syphilis cases were found to be dominant in productive age, reaching 80% (Kitong *et al.*, 2022). Education involves someone providing guidance to others to facilitate comprehension. It holds considerable sway over an individual's learning process, with the ease of information acquisition increasing as one attains higher levels of education (Petralina, 2020). The number of parities in pregnant women also has an influence on the knowledge of these pregnant women. According to the results of research conducted at the Papusungan Health Center, South Lembeh District, Bitung City, the distribution of respondents' parity mostly had a parity of 0 as many as 26 (52%), this shows that most respondents have not had experience in previous pregnancies so that it can affect respondents' knowledge (Corneles and Losu, 2015). Work is an activity that is carried out daily to earn wages to meet the needs of life. The work environment can make a person gain experience and knowledge, either directly or indirectly.

Based on the background information provided, it is clear that syphilis, a sexually transmitted infection, is still very common worldwide, particularly in Asia and Indonesia, with Surabaya being a notable area. Mothers with syphilis have a higher risk of infant and fetal mortality. Therefore, research is necessary to determine the level of awareness among pregnant women in Surabaya regarding preventing neonatal syphilis transmission. The study will be conducted in Perak Timur Health Center, Pucang Sewu Health Center, Morokrembangan Health Center, Putat Jaya Health Center, Kalirungkut Health Center, and Tanah Kali Kedinding Health Center as these health centers have the highest number of pregnant women and are known for having the most pregnant women and having STD clinics in Surabaya.

2. Methods

The study will employ an analytical observational study method with a cross-sectional design, as the researcher aims to determine the relationship between the level of knowledge among pregnant women and the prevention of syphilis

transmission to newborns. The sample size for the study will be determined through purposive sampling. A total of 233 pregnant women who meet the inclusion criteria which is pregnant women without special needs at all stages of pregnancy receiving ANC at Perak Timur Health Center, Pucang Sewu Health Center, Morokrembangan Health Center, Putat Jaya Health Center, Kalirungkut Health Center, and Tanah Kali Kedinding Health Center and willing to fill out the questionnaire will be included in the study. The research will be conducted at the aforementioned health centers from September 6 to October 12, 2023. The independent variable chosen for the study is the level of knowledge, while the dependent variables include age, education, sources of information, gravidity, and occupation. Data collection will utilize a Google Form questionnaire, with assistance from the researcher for one-on-one completion. Data processing will be done using Microsoft Excel and SPSS 25, with the outcomes presented in tabular form.

3. Results

The study sample consists of pregnant women who receive antenatal care at Perak Timur Health Center, Pucang Sewu Health Center, Morokrembangan Health Center, Putat Jaya Health Center, Kalirungkut Health Center, and Tanah Kali Kedinding Health Center in Surabaya. The total sample size for the study is 233 respondents. All the respondents have met both the inclusion and exclusion criteria, and they have also agreed to participate in the study.

3.1. Level of knowledge of pregnant women regarding efforts to prevent transmission of syphilis to newborns

To measure the level of knowledge of respondents, researchers used a questionnaire containing the respondent's personal data and 22 questions regarding knowledge of syphilis and also knowledge about efforts to prevent transmission of syphilis to newborn babies. Data on respondent's level of knowledge can be seen in the table.

Table 1 Level of knowledge of pregnant women regarding efforts to prevent transmission of syphilis to newborns

Knowledge level	Frequency (n=)	Percentage (%)
Good	95	40.7
Sufficient	97	41.6
Insufficient	41	17.5
Total	233	100

*)Source: 2023 primary data

Based on table 1, a total of 233 respondents at Perak Timur Health Center, Pucang Sewu Health Center, Morokrembangan Health Center, Putat Jaya Health Center, Kalirungkut Health Center, and Tanah Kali Kedinding Health Center found that there were 95 respondents which is 40.7% has good knowledge, 97 respondents which is 41,6% with a sufficient level of knowledge, and 41 respondents which is 17.5% with insufficient level of knowledge. So it can be concluded that almost the majority of respondents (42%) are quite knowledgeable.

3.2. Characteristics of respondents based on their knowledge about preventing syphilis transmission to newborns

Below is a table of frequency distribution of characteristics of research respondents and cross tabulation results between dependent and independent variables based on level of knowledge about preventing syphilis transmission in newborns in the city of Surabaya

The table 2 shows that the majority of respondents have completed high school education, with a total of 106 respondents. Good knowledge levels are dominated by respondents with a high school and Diploma/Bachelor's degrees (17%), with 40 respondents each. Sufficient knowledge levels are dominated by respondents with a high school education (18%), totaling 43 respondents. Insufficient knowledge levels are also dominated by respondents with a high school education (10%), numbering 23 respondents. The statistical analysis using the Spearman test yielded a p-value of 0.435 (p>0.05), indicating that there is no relationship between education level and the knowledge level of pregnant women regarding efforts to prevent syphilis transmission to newborns in the city of Surabaya.

Based on the variable of information source, the majority of sources used by respondents are mass media, with a total of 109 respondents. Good knowledge levels are dominated by respondents using mass media as their information source (18%), with 41 respondents. Sufficient knowledge levels are also dominated by respondents using mass media as their information source (21%), totaling 5o respondents. Insufficient knowledge levels are dominated by

respondents using other sources (8%), numbering 18 respondents. The statistical analysis using the Chi-square test yielded a p-value of 1.669 (p>0.95), indicating that there is no correlation between the source of information and the level of knowledge among pregnant women regarding efforts to prevent syphilis transmission to newborns in the city of Surabaya.

Table 2 Frequency distribution of respondent characteristics cross tabulation results between dependent and independent variables at the research site

Characteristics of respondens	Knowledge about syphilis prevention on newborn						Total		P *Value*
	Good		Sufficient		Insufficient				
	f(n=95)	%	f(n=97)	%	f(n=41)	%	f(n=233)	%	
Education									
Elementary school	4	2	6	3	3	1	13	6	0.435
Junior high school	11	5	7	3	3	1	21	9	
Senior high school	40	17	43	18	23	10	106	45	
Diploma/Bachelor	40	17	41	18	12	5	93	40	
Total	95	41	97	42	41	18	233	100	
Source of Information									
Health workers	33	14	31	13	11	5	75	32	0.669
Internet	41	18	50	21	18	8	109	47	
Friends	11	5	10	4	7	3	28	12	
Others	10	4	6	3	5	2	21	9	
Total	95	41	97	42	41	18	233	100	
Gravidity									
Primigravida	38	16	53	23	20	9	111	48	0.116
Multigravida	54	23	40	17	21	9	115	49	
Grandemultigravida	3	1	4	6,62	0	0	7	3	
Total	95	41	97	42	41	18	233	100	
Age									
<20 years old	2	1	2	1	3	1	7	3	0.116
20-34 years old	77	33	83	36	34	15	194	83	
≥35 years old	16	7	12	5	4	2	32	14	
Total	95	41	97	42	41	18	233	100	
Occupation									
Housewife	40	17	48	21	20	9	108	46	0.535
Farmer/Laborer	2	1	1	0	0	0	3	1	
Business	15	6	17	7	9	4	41	18	
Employee	24	10	24	10	9	4	57	24	
PNS/TNI/POLRI	10	4	7	3	3	1	20	9	
Others	4	2	0	0	0	0	4	2	
Total	95	41	97	42	41	18	233	100	

* Source: 2023 primary data

The variable of gravidity indicates that the majority of respondents are multigravida, totaling 115 respondents. Good knowledge levels are dominated by multigravida respondents (23%), with 54 respondents. Sufficient knowledge levels are dominated by primigravida respondents (23%), totaling 53 respondents. Insufficient knowledge levels are dominated by multigravida respondents (9%), numbering 21 respondents. The statistical analysis using the Spearman test yielded a p-value of 0.116 (p>0.05), indicating that there is no relationship between gravidity and the knowledge level of pregnant women regarding efforts to prevent syphilis transmission to newborns in the city of Surabaya.

The table shows that the majority of respondents fall in the age range of 20-34 years, totaling 194 respondents. Good knowledge levels are dominated by respondents in the 20-34 age group (33%), with 77 respondents. Sufficient knowledge levels are also dominated by respondents in the 20-34 age group (36%), totaling 83 respondents. Insufficient knowledge levels are also dominated by respondents in the 20-34 age group (15%), numbering 34 respondents. The statistical analysis using the Spearman test yielded a p-value of 0.116 (p>0.05), indicating that there is no relationship between age and the knowledge level of pregnant women regarding efforts to prevent syphilis transmission to newborns in the city of Surabaya.

Based on table 2, it is evident that most of respondents are housewife category, totaling 108 respondents. Good knowledge levels are dominated by respondents employed in the housewife category (17%), with 40 respondents. Sufficient knowledge levels are also dominated by respondents employed in the housewife category (21%), totaling 48 respondents. Insufficient knowledge levels are also dominated by respondents employed in the housewife category (9%), numbering 20 respondents. The statistical analysis using the Chi-Square test yielded a p-value of 0.535 (p>0.05), indicating that there is no relationship between employment and the knowledge level of pregnant women regarding efforts to prevent syphilis transmission to newborns in the city of Surabaya.

3.3. Characteristics of Husband's Occupation among Respondents

Here is the table showing the distribution of respondents' knowledge levels based on the characteristics of their husbands' occupations.

Table 3 Characteristics of Husband's Occupation among Respondents

Husband's occupation	Good		Sufficient		Insufficient		Total	
	f(n=95)	%	f(n=97)	%	f(n=41)	%	f(n=233)	%
Unemployed	0	0	1	0	0	0	1	0
Farmer/Laborer	8	3	10	4	1	0	19	8
Businessman	24	10	23	10	10	4	57	24
Employee	44	19	44	19	23	10	111	48
PNS/TNI/POLRI	16	7	18	8	6	3	40	17
Others	3	1	1	0	1	0	5	2
Total	95	41	97	42	41	18	233	100

*)Source: 2023 primary data

Based on the table, most of the respondents' husbands' jobs are employees (48%) with a total of 111 respondents. The good level of knowledge is dominated by respondents whose husbands work in the employee category (19%), totaling 44 respondents. The sufficient level of knowledge was also dominated by respondents with husbands in the employee category (19%) totaling 44 respondents. The level of poor knowledge is also dominated by respondents whose husbands work in the employee category (10%) totaling 23 respondents.

3.4. Triple elimination

The following is the coverage of the triple elimination test obtained on pregnant women:

The table shows that the results from a total of 233 respondents, the majority (78%) have done the triple elimination laboratory test, which is a total of 181 respondents. Meanwhile, respondents who have not done triple elimination yet are 52 respondents (22%). Triple elimination is a screening for the prevention of Syphilis, HIV, and Hepatitis B which is done as a unit and is also carried out to ensure that even if the mother is infected with Syphilis, Hepatitis B, and/or HIV,

the infection is not transmitted to the child as much as possible (Kementerian Kesehatan, 2017). The World Health Organization (WHO) guidelines for confirming the elimination of HIV and syphilis mandate that countries must meet and sustain (for over 1 year) specific impact targets. These include achieving a population HIV case rate of ≤50 per 100,000 live births, an HIV mother-to-child transmission (MTCT) rate of <5% in breastfeeding countries or <2% in non-breastfeeding countries, and a congenital syphilis case rate of ≤50 per 100,000 live births (Lolekha *et al.*, 2021). The research results obtained by Wulandari and Kusumaningsih, 2022 on pregnant women at Purworejo Health Center show that respondents with sufficient knowledge, 69.6% undergo triple elimination tests during the pandemic (Wulandari and Kusumaningsih, 2022).

Table 4 Coverage of triple elimination checks

Triple Elimination	Frequency (n=)	Percentage (%)
Done	181	78
Not yet	52	22
Total	233	100

*)Source: 2023 primary data

4. Discussion

According to the results of the analysis, there is no significant correlation between education level and knowledge regarding prevention methods for neonatal syphilis, with a p value of 0.435. This finding is consistent with a study conducted in Yogyakarta in 2022 on hypertension knowledge, which also showed no correlation between education level and knowledge (Fitria Dhirisma and Idhen Aura Moerdhanti, 2022). High education level does not necessarily lead to higher levels of knowledge. Knowledge can be acquired through various means, such as self-initiative or influence from others, as well as through experience and learning, both formal and informal. In the data collected, almost half of the respondents (45%) had completed senior high school/vocational school, and 40% had completed diploma/bachelor's degree, indicating that more than half of the respondents had a relatively high level of education. This finding contrasts with a study that found a relationship between education level and an individual's ability to receive and understand information (Corneles and Losu, 2015). However, a study by Sianipar (2017) found that before receiving health education, many respondents had low or insufficient knowledge, but after receiving health education, there was an increase in the number of respondents with good knowledge (Sianipar *et al.*, 2017). A study conducted in Rangkasbitung in 2017 found a correlation between the mother's education and knowledge of pregnancy risks (Herliani, Siti dan Yustiana, 2017). This finding is also supported by a similar study conducted in East Kalimantan in 2021 on mothers' knowledge of pregnancy risks, which had a significant p-value for the education variable (Triana *et al.*, 2021).

In this current study, it can be inferred that education, whether from school or higher education institutions, does not have a significant effect on knowledge regarding prevention methods for neonatal syphilis in Surabaya. This may be due to the fact that reproductive health issues are still considered taboo in Indonesia, making it difficult for the population to openly discuss these topics. As a result, many people remain unaware of reproductive health issues. Education should be developed maximally to provide positive feedback and improve knowledge and quality of life.

Based on the analysis results, it was found that there is no significant relationship between the source of information and the level of knowledge, with a p-value of 0.669 > (0.05). This result is consistent with a study on adolescent knowledge in Cimahi City, where the variable of information source had a p-value of 0.949, indicating no relationship between the source of information and knowledge. A study by Sainturi in 2021 on the relationship between the source of information and knowledge in RW 07 Setia Asih Village also found no significant relationship between the two factors. However, this finding contradicts a study conducted in Ethiopia in 2020 on sexually transmitted infections (STIs) among students, which found a significant relationship between the source of information and knowledge, with a p-value of 0.013 (Nigussie and Yosef, 2020).

The results of this study indicate a lack of correlation between the source of information and knowledge, even though the majority of respondents obtained information through mass media, particularly the internet, which should be an easily accessible tool for obtaining various types of information. This lack of correlation may be attributed to the fact that respondents' access to information through mass media is not solely focused on health or pregnancy-related risks. For example, the internet provides a wide range of information beyond health-related knowledge, potentially distracting respondents and hindering their full comprehension of health information. Similarly, as mentioned by

Sianturi and Aprianingsih (2021), the lack of a significant relationship between the source of information and knowledge could be due to respondents' limited acceptance of HIV/AIDS-related information. Many people are still unfamiliar with HIV/AIDS, including its transmission methods, symptoms, and prevention measures, leading to a situation where individuals only seek information on social media when they are ill. Additionally, in this era, many individuals do not effectively utilize information sources, resulting in a lack of knowledge among the population regarding various diseases (Sianturi and Aprianingsih, 2021).

Most of the respondents were multigravida. Previous pregnancy experience can affect the knowledge of pregnant women. Respondents who experienced pregnancy for the first time had the possibility of having no more knowledge than mothers with more than one gravida (Corneles and Losu, 2015). Based on the results of the analysis conducted, it was found that there was no relationship between gravida and the level of knowledge with a p-value of 0.116> (0.05). The results of this study are in line with research conducted on pregnant women in Northwest Ethiopia in 2019 which found no significant relationship between parity and syphilis (Tareke *et al.*, 2019). In line with research conducted by in 2017 on factors affecting the knowledge of pregnant women about the kia book with one of the variables being gravida with a p-value = 0.993 so that there is no significant relationship between gravida and the level of knowledge of respondents (Arinta, 2017). The difference in the results of research conducted at the East Kalimantan Fertilizer Hospital on pregnant women about factors affecting pregnant women's knowledge of pregnancy danger signs has a significant p-value on the gravida variable, so that means there is a relationship between gravida and the level of knowledge in pregnant women regarding pregnancy danger signs (Triana *et al.*, 2021). Research conducted on factors affecting pregnant women's knowledge about Fe tablets at the Jatibening Health Center in 2019 on the parity variable obtained a p-value of 0.025 which means that there is a relationship between parity and the knowledge of pregnant women (Galaupa and Supriani, 2019). O.ne theory that also contradicts the results of this study, namely according to Corneles and Losu in 2015, argues that previous pregnancy experience can affect knowledge in pregnant women. Respondents who experienced pregnancy for the first time had the possibility of having no more knowledge than mothers with gravida more than once (Corneles and Losu, 2015).

There is no relationship between gravidity and the level of knowledge in the results of this study because for all ages of pregnancy, both primigravida, multigravida, and grandemultigravida mothers can access information easily via the internet in this era of globalization. Mothers with more than 1 pregnancy experience may also feel that pregnancy is a common thing so that they no longer have curiosity about information about health in their pregnancy. The opinion of Anggraini, 2022 who made observations about knowledge in pregnant women in the Gedang Anak area also argued that pregnant women with multigravida who had insufficient knowledge because it was caused by the mother rarely making pregnancy visits caused by the mother's experience who had been pregnant before so that she considered information about the danger signs of pregnancy had been obtained and felt lazy or did not need to look for new information and understand more deeply about information about the danger signs of pregnancy (Anggraini *et al.*, 2022).

Based on the results of the analysis conducted, it was found that there was no relationship between age and knowledge level with a p-value of 0.116> (0.05). This study shows that the majority of pregnant women, namely 194 respondents (83%) aged 20-35 years. This age is the ideal age for women to conceive. Research conducted to find the relationship between age and the level of HIV/AIDS knowledge in East Nusa Tenggara found that there was no influence between age and a person's level of knowledge (Berek *et al.*, 2019). Research conducted on pregnant women at PMB Siti Rohanah Bekasi also found that there was no influence between age and the level of knowledge of pregnant women about HIV / AIDS (Puspitasari and Widaningsih, 2022). At the age of over 35 years, usually a woman starts to worry and already thinks that she is starting to move to an older age so that their thoughts are divided between themselves and attention to their children. Therefore at this age the mother has better knowledge because of the added experience as well (Arinta, 2017). There are previous studies that contradict the results of this study, one of which is research on factors affecting STI knowledge conducted in Malaysia in 2020 with student respondents that there is a relationship between age and level of knowledge (Mansor *et al.*, 2020). Research conducted on adolescents in the Batoh Health Center area of Banda Aceh City also obtained a p-value of 0.005 which means that there is a relationship between age and adolescents' knowledge about eradicating sexually transmitted diseases in the Batoh Health Center working area of Banda Aceh City (Andika *et al.*, 2020). The results of research conducted at the East Kalimantan Fertilizer Hospital on pregnant women about factors affecting pregnant women's knowledge of pregnancy danger signs have a significant p-value on the age variable, which means that there is a relationship between age and the level of knowledge in pregnant women regarding pregnancy danger signs (Triana *et al.*, 2021). The results of research conducted by several researchers, one of which is that the older a person's age will affect the thinking process due to the development of a person's knowledge and experience which is influenced by association (Sefti, Michael, 2013). The older a person's level of thinking is more mature (Sianipar *et al.*, 2017). The age between 20-35 years is the age where a person is mature and thinks more maturely so that his knowledge is better (Arinta, 2017).

In this study, it can be concluded that there is no relationship between age and level of knowledge because different age groups have different educational backgrounds. High age does not make a person's level of knowledge higher. The majority of respondents are aged 20-34 years where this age is a productive age. However, after 35 years of age, respondents will get older and focus more on finances and their children so that there is less interest in seeking knowledge of a disease.

Someone who has a job will be easier to get information and experience, the more information he gets, the higher his level of knowledge (Sianipar *et al.*, 2017). Based on the results of the analysis conducted, it was found that there was no relationship between work and the level of knowledge with a p-value of 0.535> (0.05). The results of this study are in line with research conducted in 2017 on pregnant women with the results of the analysis found that statistically there is no relationship between employment status and the knowledge of pregnant women (Herliani, Siti dan Yustiana, 2017). According to the results of this study, it was found that many mothers worked to make a living so that mothers wanted practical things. They just want to check their pregnancy and go straight home without getting information from health workers and it could be that working mothers do not check their pregnancy because they do not have time so that pregnant women who work do not get complete information. Research conducted in Bekasi regarding the relationship between individual characteristics and the level of community knowledge about Hiv / AIDS disease in Bekasi found insignificant results between the employment variable and knowledge, which means that the respondent's job has no influence on the respondent's knowledge. This can happen because the type of work of respondents varies. Most of the respondents' jobs are not working, namely housewives, most of the respondents are busy with their jobs so that the respondents are not curious in seeking information about HIV / AIDS disease (Sianturi and Aprianingsih, 2021). Contrary to research conducted on factors affecting pregnant women's knowledge about Fe tablets at the Jatibening Health Center in 2018, a p-value of 0.039 was obtained, which means that there is a relationship between work and the knowledge of pregnant women (Galaupa and Supriani, 2019).

The occupation of the majority of respondents in the study was housewives who should have more time to access the internet. However, the results obtained were that there was no influence between the respondents' occupations and their level of knowledge. Housewives certainly also have a lot of homework to do. The housewife respondents also spent the whole day taking care of their children, so they did not have time to access health information. When conducting ANC, mothers do not pay much attention to what is conveyed by health workers because the mother's mind is divided with home duties and also taking care of her child. Mothers who have jobs have their own busy lives, so they do not focus on the information provided and only do ANC because of orders from the midwife who examines them.

5. Conclusion

This research shows the conclusion that the majority of respondents at the research location, namely 97%, had sufficient knowledge regarding preventing syphilis transmission, followed by respondents with good knowledge, which is 95%, and the remainder were respondents with poor knowledge, with 41%. The implementation of the government's mandatory screening program for pregnant women, namely triple elimination, has been carried out well with 78% of respondents having carried out triple elimination screening. Based on research conducted on 233 respondents, it is a description of the level of knowledge of pregnant women regarding efforts to prevent the transmission of syphilis to newborns in the city of Surabaya, located at the East Perak Health Center, Pucang Sewu Health Center, Morokrembangan Health Center, Putat Jaya Health Center, Kalirungkut Health Center, and Tanah Kali Kedinding Health Center. The conclusion was obtained that there was no relationship between education, age, information sources, gravida, and occupation with knowledge.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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