pISSN: 2621-5310X / eISSN: 2621-5470

Vol.5 No.2 | August 2022

JURNAL BIOMEDIKA DAN KESEHATAN

Publikasi dari Fakultas Kedokteran Universitas Trisakti

www.jbiomedkes.org

Editorial Team

Original Article

ORIGINAL ARTICLE

KNOWLEDGE LEVEL WAS NOT RELATED TO TOXOPLASMOSIS PREVENTIVE BEHAVIOR IN WOMEN OF CHILDBEARING AGE

Nadia Mayra Afina[1], Dian Mediana[2*]

ABSTRACT

BACKGROUND
Toxoplasmosis is an infectious disease caused by the parasite Toxoplasma gondii. In Indonesia, the number of positive T. gondii findings in humans was around 53%. The transmission of toxoplasmosis from animals to humans can be through food, such as consumption of undercooked meat or raw vegetables or gardening without using gloves. Toxoplasmosis infection in women of childbearing age, especially during pregnancy, will be dangerous because it can cause premature birth, spontaneous abortion, fetal death, or babies born with congenital toxoplasmosis. This study investigates the relationship between knowledge level and toxoplasmosis prevention behaviour.

METHODS
This study uses a cross-sectional analytic observational study design on mothers aged 15-49 years at Puskesmas Grogol Petamburan, Jakarta, in November-December 2021. The samples studied were 132 samples. Data was collected using a knowledge level questionnaire about toxoplasmosis containing 20 statements and a toxoplasmosis prevention behaviour questionnaire containing eight statements. Data were analyzed by chi-square statistical test SPSS with significance limits of $p<0.05$.

RESULTS
Of the 132 respondents who participated in this study, 46 respondents (34.8%) had a good level of knowledge (score ≥ 8), while 86 respondents (65.2%) had a poor level of knowledge. A total of 91 respondents (68.9%) had very good preventive behavior, 26 respondents (19.7%) had good preventive behavior, and 15 respondents (11.4%) had poor preventive behavior. The chi-square statistical test results showed no significant relationship between the level of knowledge and toxoplasmosis prevention behavior ($p=0.867$).

CONCLUSION
Toxoplasmosis preventive behavior in women of childbearing age at Grogol District Health Center was not depend on the level of knowledge of toxoplasmosis. Toxoplasmosis preventive behavior may be related to other factors that require further research.

KEYWORDS: Knowledge, Prevention Behavior, Toxoplasmosis, Childbearing Age

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J Biomedika Kesehat 2022;5(1):14-23
DOI: 10.18051/JBiomedKes.2022.v5.14-23

pISSN: 2621-539X / eISSN: 2621-5470

ABSTRAK

Kajian Tingkat Pengetahuan Tidak Berhubungan Dengan Perilaku Pencegahan Toksoplasmosis Pada Ibu Usia Subur

LATAR BELAKANG

Toksoplasmosis merupakan penyakit infeksi yang disebabkan oleh parasit Toxoplasma gondii. Di Indonesia, angka penemuan T.gondii positif pada manusia adalah sekitar 53%. Sumber penularan toksoplasmosis dari hewan ke manusia dapat melalui makanan, seperti konsumsi daging kurang matang atau sayuran mentah, atau berkebun tanpa menggunakan sarung tangan. Infeksi toksoplasmosis pada wanita usia subur terutama di saat kehamilan akan berbahaya karena dapat menyebabkan kelahiran prematur, abortus spontan, kematian janin, ataupun bayi lahir dengan toksoplasmosis kongenital. Penelitian ini bertujuan untuk mengetahui hubungan tingkat pengetahuan dengan perilaku pencegahan toksoplasmosis pada ibu usia subur.

METODE

Penelitian ini menggunakan desain studi observasional analitik *cross sectional*, pada ibu usia 15-49 tahun di Puskesmas Grogol Petamburan, Jakarta pada bulan November-Desember 2021. Sampel yang diteliti sebanyak 132 sampel. Pengumpulan data dilakukan dengan menggunakan kuesioner tingkat pengetahuan mengenai toksoplasmosis yang berisi 20 pernyataan, dan kuesioner perilaku pencegahan toksoplasmosis yang berisikan 8 pernyataan. Data dianalisis menggunakan program SPSS dengan uji statistik chi square, batas kemaknaan $p<0.05$.

HASIL

Dari sejumlah 132 responden berpartisipasi pada penelitian ini, sebanyak 46 responden (34.8%) memiliki tingkat pengetahuan yang baik (skor ≥ 8), sementara 86 responden (65.2%) memiliki tingkat pengetahuan yang kurang. Sebanyak 91 responden (68.9%) memiliki perilaku pencegahan yang sangat baik, 26 responden (19.7%) memiliki perilaku pencegahan baik, sementara 15 responden (11.4%) memiliki perilaku pencegahan yang kurang. Hasil uji statistik *chi square* menunjukkan tidak ada hubungan bermakna antara tingkat pengetahuan dan perilaku pencegahan toksoplasmosis ($p=0.867$).

KESIMPULAN

Perilaku pencegahan toksoplasmosis pada ibu usia subur di Puskesmas Kecamatan Grogol tidak tergantung kepada tingkat pengetahuan toksoplasmosis. Perilaku pencegahan toksoplasmosis mungkin berhubungan dengan faktor-faktor lain yang masih membutuhkan penelitian lebih lanjut.

KATA KUNCI: Pengetahuan, Perilaku Pencegahan, Toksoplasmosis, Usia Subur

INTRODUCTION

Toxoplasmosis is an infectious disease caused by the parasite Toxoplasma gondii. Toxoplasmosis is transmitted from animals to humans, also known as a zoonotic disease. [1] In the United States, about 85% of women of reproductive age are infected by the parasite Toxoplasma gondii.[2] Areas with a hot climate, lowlands, and humid air have high infection rates. [3] Most countries in South America, the Middle East, and other low-income countries reported high seropositivity to toxoplasmosis infection, both in normal and immunocompromised.[4] In Indonesia, the finding rate of T gondii positive in humans is about 53%[5] or 2-88% spread throughout the archipelago of Indonesia. The transmission source supports this high prevalence rate, especially cats and the Felidae family.[6] The parasite Toxoplasma gondii develops in the cat's intestines, produces oocysts and is then excreted in the feces. Sources of transmission from animals to humans can be through food, such as the consumption of undercooked meat or raw vegetables that contain oocysts, or gardening without using gloves so that the oocysts can stick to the hands.[3]

According to the Indonesian Ministry of Health, the age of 15-49 years is the fertile age for women.[7] Toxoplasmosis infection in women of childbearing age, especially during pregnancy, will be dangerous because it can cause premature birth, spontaneous abortion, fetal death, or babies born with congenital toxoplasmosis.[8] The clinical manifestations of congenital toxoplasmosis are very diverse, 75% are asymptomatic in infected newborns. However, if the infection occurs in the first trimester of pregnancy, the clinical symptoms

are usually more severe. Chorioretinitis, intracranial calcifications, and hydrocephalus are a triad of toxoplasmosis infection.[9]

Some risk factors for toxoplasmosis include eating contaminated fruit or vegetables, drinking unclean water, blood transfusions, receiving organ transplants, exposure to feces contaminated with the Toxoplasma gondii parasite, demographic factors, and lack of knowledge about toxoplasmosis. Research conducted in Malaysia, the Philippines, and Thailand on pregnant women by Andiappan et al. showed that most pregnant women did not know or were less sure about toxoplasmosis infection. Toxoplasmosis infection in women of childbearing age in Palu city is very low.[8] Based on research by Elsafi et al., there is a relationship between lack of knowledge and increased risk of toxoplasmosis infection in pregnant women.[10] However, research by Anggreni et al. knowledge of toxoplasmosis prevention behavior in pregnant women.[11]

From the description above, no research has been found in the Jakarta area regarding the level of knowledge and prevention behavior against toxoplasmosis. In addition, considering the importance of preventing toxoplasmosis for women of childbearing age, especially in the densely populated Jakarta area with many pets roaming around, the researchers are interested in conducting research that aims to increase the knowledge of women of childbearing age on toxoplasmosis prevention behavior.

METHODS

This study uses a cross-sectional analytic observational study design located at the Grogol Petamburan Health Center, Jakarta, from November to December 2021. The sample in this study was women aged 15-49 years who came to the Grogol Petamburan Health Center, Jakarta, had given birth and lived in the same neighbourhood. The exclusion criteria for this study were women unable to communicate well and had diseases that impair immunity.

The prevalence of toxoplasmosis infection was 53% [5,12] with a measurement accuracy of 0.05% and a significance level of 95%, so the infinite population was 383 people. However, the number of mothers aged 15-49 is 164 people, so the sample needed is 115 people plus a dropout of 15% to 132 people.

The sample in this study was selected through the consecutive non-probability sampling method. The data taken is primary data through guided interviews with questionnaires. The questionnaire used is a knowledge level questionnaire that refers to previous research, namely the study of Amin et al.[12], which contains 20 statements related to the mode of transmission of toxoplasmosis, congenital toxoplasmosis, and how to prevent toxoplasmosis. Respondents can choose the answer "true", "wrong", or "don't know" according to the respondent's knowledge. The correct answer will be given a score of 1, and the wrong answer or "don't know" response is given a score of 0. The level of knowledge is said to be good if the score is more than equal to 8 and said to be less if the score is less than 8. The preventive behavior questionnaire refers to the research of Amin et al. al[13], which contains toxoplasmosis prevention behaviors which include: consumption of raw/undercooked meat, consumption of unwashed or peeled vegetables and fruit, contact with the soil when gardening, washing hands after gardening, drinking water sources, contact with cats, and wash kitchen utensils with warm water and soap. The scoring of the questionnaire uses a Likert scale.

Data analysis was performed using the SPSS application. The variables that will be assessed univariately in this study are knowledge about toxoplasmosis, toxoplasmosis prevention behavior, maternal age, and education level. The variable that will be assessed bivariate in this study is the relationship between knowledge level and toxoplasmosis prevention behavior in mothers aged 15-49. The relationship between the two variables will be analyzed by a chi-square statistical test, with a significant degree of 95% (α=0.05). The p-value <0.05 indicates a relationship between the two variables studied, while the p-value >0.05 indicates that there is no significant relationship between the two variables studied. This research was conducted after obtaining ethical approval from the ethics committee of the Faculty of Medicine, Universitas Trisakti, with number 52//KER-FK/IX/2021.

RESULT

Based on the results of the study, from

Table 1. Frequency distribution of age, education level, knowledge level, and toxoplasmosis prevention behavior

Variable (n = 132)	Frequency	
	(n)	Percentage (%)
Age		
15-19	3	2.3%
20-24	25	18.9%
24-29	38	28.8%
30-34	23	17.4%
35-39	22	16.7%
40-44	11	8.3%
45-49	10	7.6%
Level of education		
Primary school	12	9.1%
Secondary school	33	25%
High school	61	46.2%
College	26	19.7%
Level of knowledge		
Good	46	34.8%
Low	86	65.2%
Toxoplasmosis prevention behavior		
Very good	91	68.9%
Good	26	19.7%
Low	15	11.4%

132 respondents, the most age was 24 – 29 years (28.8%), and the highest level of education was high school (46.2%). Most of the respondents have a low level of knowledge about toxoplasmosis, which is 65.2%. The level of knowledge at least is on the mode of transmission of toxoplasmosis, especially through cat feces. For toxoplasmosis prevention behavior, most respondents have very good toxoplasmosis prevention behavior, namely 68.9%. The preventive behaviors carried out sequentially the most are avoiding the consumption of raw/undercooked meat, washing hands after contact with the ground, and consuming washed fruits and vegetables.

Relationship between knowledge level and toxoplasmosis prevention behavior

In table 2, it can be seen that the respondents with a good knowledge level are more likely to have very good preventive behavior compared to respondents with less knowledge. The chi-square test results obtained a p-value=0.867, where the p-value >0.05, so it can be concluded that there is no significant relationship between the level of knowledge about toxoplasmosis and toxoplasmosis prevention behavior in mothers aged 15-49 years.

DISCUSSION

In this study, the frequency of respondents who had less knowledge about toxoplasmosis was 86 respondents (65.2%), while the good ones were 46 respondents (34.8%). This finding indicates that most respondents still have less knowledge about toxoplasmosis infection. Furthermore, most respondents did not know the source of toxoplasmosis infection transmission, especially through cat feces. However, most respondents know this disease has a bad impact on the fetus, although they do not know what kind of impact it will have. This could be due to the lack of information regarding toxoplasmosis infection, considering that this disease is still included in neglected parasitic diseases. Hence, the information provided to health services is inadequate.[14] In addition, access to other sources of information such as social media, newspapers, magazines, and others can also affect the level of knowledge.[15,16] In the working area of the Grogol Petamburan Public Health Center, Jakarta, in the last few years, there has never been any outreach or dissemination of information about toxoplasmosis in the media.

This lack of knowledge about toxoplasmosis is in line with research by Andiappan et al. in Malaysia, the Philippines, and Thailand, where most pregnant women do not have knowledge or are unsure about toxoplasmosis infection.[4] The study of Sumolang et al. in eight health centers in Palu also showed that only 24.1% of women of childbearing age had good knowledge of toxoplasmosis. From this, it can be seen that the level of knowledge about toxoplasmosis in the city is still very low.[8]

Most of the respondents, namely 91

Table 2. Relationship between knowledge level and toxoplasmosis prevention behavior

Variable	Toxoplasmosis prevention behavior (n(%))			P value
	Low	Good	Very good	
Level of knowledge				
Low	10 (11.63%)	18 (20.93%)	58 (67.44%)	0.867*
Good	5 (10.87%)	8 (17.39%)	33 (71.74%)	

* : Chi-square test

(68.9%) in this study, had very good toxoplasmosis prevention behavior. The results of this study are supported by research conducted by Hamou et al., where 95% of pregnant women have good preventive behavior against toxoplasmosis.[17] Research by Moura et al. also shows that most women (>70%) have good preventive behavior against toxoplasmosis infection. This is because most women of childbearing age, especially during pregnancy, are more aware of the possibility of being infected with various diseases so that they carry out good preventive behavior.[18] The results of Iqbal et al.'s study show that women who have given birth and are pregnant >90% avoid most high-risk activities. Toxoplasmosis infection transmission, women who had given birth were more likely to avoid contact with cat feces (p=0.004) and eat cooked meat (p=0.001).[19]

The chi-square test results in this study showed no relationship between the level of knowledge and the behavior of preventing toxoplasmosis with p=0.867. These results are supported by research conducted by Amin et al. that preventive behavior does not have a significant relationship with the level of knowledge about toxoplasmosis (p=0.694).[12] In addition, research conducted by Anggreni et al. with toxoplasmosis prevention behavior with p = 0.106.[10] Research conducted by Andiappan et al. showed that most pregnant women do not have or are less sure about toxoplasmosis infection. However, as many as 83% of respondents practice habits that prevent toxoplasmosis infection on a regular basis.[4]

According to Lawrence Green's theory, a person's behavior towards disease is influenced by various factors, one of which is knowledge which is included in predisposing factors, where a person's level of knowledge will be the basis for personal considerations of an individual that affect the occurrence of a behavior. Therefore, the higher a person's knowledge, the higher the prevention efforts carried out.[19] Contrary to this research, where the level of knowledge is not related to toxoplasmosis prevention behavior. This can be due to the prevention behavior assessed in this study being a generally clean and healthy lifestyle to prevent various infectious diseases. Without realizing it, most of the respondents have done this behavior. This is in line with the research by Hamou et al., where most of the respondents did this behavior without realizing that it was a preventive behavior against toxoplasmosis.[16] During antenatal check-ups during pregnancy, most women also get more information about habits and behaviors that should be done or avoided. Still, without knowing the specifics of the disease so they tend to increase their vigilance and will carry out preventive behavior even though they don't know about toxoplasmosis infection.[17, 20] In addition, several other factors can influence a person's behavior towards preventing disease, such as the presence of a trusted person, the availability of resources, as well as the culture and traditions that exist in the community.[19] However, lack of knowledge can also increase the risk of toxoplasmosis infection. So, health education about toxoplasmosis is still needed. This is supported by studies showing that there is a significant reduction in the incidence of toxoplasmosis (based on serum tests) after providing health counselling regarding toxoplasmosis infection in pregnant women.[9]

This study has several limitations, namely the absence of a specific questionnaire that can assess toxoplasmosis prevention behavior, and not examining other factors that influence toxoplasmosis prevention behavior.

CONCLUSION

Toxoplasmosis prevention behavior in women of childbearing age at the Grogol District Health Center does not depend on the level of knowledge of toxoplasmosis. Further research can be conducted on the level of knowledge of other variables, such as the incidence of toxoplasmosis (with a definite diagnosis of the respondent's antibody titre) and other factors that influence toxoplasmosis prevention behavior. To assess toxoplasmosis prevention behavior, you can use a more specific questionnaire to assess toxoplasmosis prevention behavior.

ACKNOWLEDGMENTS

Thank you to the Grogol Petamburan Health Center, West Jakarta and all respondents, as well as the Faculty of Medicine, Universitas Trisakti.

AUTHORS CONTRIBUTION

NMA contributes to the collection, processing and analysis of data. NMA and DM

contributed to the writing of the manuscript. DM contributed to the improvement of the manuscript.

FUNDING STATEMENT

Funding for this research came from own funds.

CONFLICT OF INTEREST

All researchers have no conflict of interest with the results of this study.

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by Dian Mediana

Submission date: 17-Nov-2025 11:04PM (UTC+0700)
Submission ID: 2719825643
File name: toxoplasmosis.pdf (221.86K)
Word count: 3616
Character count: 20273

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J Biomedika Kesehat 2022;5(2):69-74
DOI: 10.18051/JBiomedKes.2022.v5.69-74

pISSN: 2621-539X / eISSN: 2621-5470

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According to the Indonesian Ministry of Health, the age of 15-49 years is the fertile age for women.[7] Toxoplasmosis infection in women of childbearing age, especially during pregnancy, will be dangerous because it can cause premature birth, spontaneous abortion, fetal death, or babies born with congenital toxoplasmosis.[8] The clinical manifestations of congenital toxoplasmosis are very diverse, 75% are asymptomatic in infected newborns. However, if the infection occurs in the first trimester of pregnancy, the clinical symptoms

are usually more severe. Chorioretinitis, intracranial calcifications, and hydrocephalus are a triad of toxoplasmosis infection.[9]

Some risk factors for toxoplasmosis include eating contaminated fruit or vegetables, drinking unclean water, blood transfusions, receiving organ transplants, exposure to feces contaminated with the Toxoplasma gondii parasite, demographic factors, and lack of knowledge about toxoplasmosis. Research conducted in Malaysia, the Philippines, and Thailand on pregnant women by Andiappan et al. showed that most pregnant women did not know or were less sure about toxoplasmosis infection. Toxoplasmosis infection in women of childbearing age in Palu city is very low.[8] Based on research by Elsafi et al., there is a relationship between lack of knowledge and increased risk of toxoplasmosis infection in pregnant women.[10] However, research by Anggreni et al. knowledge of toxoplasmosis prevention behavior in pregnant women.[11]

From the description above, no research has been found in the Jakarta area regarding the level of knowledge and prevention behavior against toxoplasmosis. In addition, considering the importance of preventing toxoplasmosis for women of childbearing age, especially in the densely populated Jakarta area with many pets roaming around, the researchers are interested in conducting research that aims to increase the knowledge of women of childbearing age on toxoplasmosis prevention behavior.

METHODS

This study uses a cross-sectional analytic observational study design located at the Grogol Petamburan Health Center, Jakarta, from November to December 2021. The sample in this study was women aged 15-49 years who came to the Grogol Petamburan Health Center, Jakarta, had given birth and lived in the same neighbourhood. The exclusion criteria for this study were women unable to communicate well and had diseases that impair immunity.

The prevalence of toxoplasmosis infection was 53% [5,12] with a measurement accuracy of 0.05% and a significance level of 95%, so the infinite population was 383 people. However, the number of mothers aged 15-49 is 164 people, so the sample needed is 115 people plus a dropout of 15% to 132 people.

The sample in this study was selected through the consecutive non-probability sampling method. The data taken is primary data through guided interviews with questionnaires. The questionnaire used is a knowledge level questionnaire that refers to previous research, namely the study of Amin et al.[12], which contains 20 statements related to the mode of transmission of toxoplasmosis, congenital toxoplasmosis, and how to prevent toxoplasmosis. Respondents can choose the answer "true", "wrong", or "don't know" according to the respondent's knowledge. The correct answer will be given a score of 1, and the wrong answer or "don't know" response is given a score of 0. The level of knowledge is said to be good if the score is more than equal to 8 and said to be less if the score is less than 8. The preventive behavior questionnaire refers to the research of Amin et al. al[13], which contains toxoplasmosis prevention behaviors which include: consumption of raw/undercooked meat, consumption of unwashed or peeled vegetables and fruit, contact with the soil when gardening, washing hands after gardening, drinking water sources, contact with cats, and wash kitchen utensils with warm water and soap. The scoring of the questionnaire uses a Likert scale.

Data analysis was performed using the SPSS application. The variables that will be assessed univariately in this study are knowledge about toxoplasmosis, toxoplasmosis prevention behavior, maternal age, and education level. The variable that will be assessed bivariate in this study is the relationship between knowledge level and toxoplasmosis prevention behavior in mothers aged 15-49. The relationship between the two variables will be analyzed by a chi-square statistical test, with a significant degree of 95% (α=0.05). The p-value <0.05 indicates a relationship between the two variables studied, while the p-value >0.05 indicates that there is no significant relationship between the two variables studied. This research was conducted after obtaining ethical approval from the ethics committee of the Faculty of Medicine, Universitas Trisakti, with number 52//KER-FK/IX/2021.

RESULT

Based on the results of the study, from

Table 1. Frequency distribution of age, education level, knowledge level, and toxoplasmosis prevention behavior

Variable (n = 132)	Frequency (n)	Percentage (%)
Age		
15-19	3	2.3%
20-24	25	18.9%
24-29	38	28.8%
30-34	23	17.4%
35-39	22	16.7%
40-44	11	8.3%
45-49	10	7.6%
Level of education		
Primary school	12	9.1%
Secondary school	33	25%
High school	61	46.2%
College	26	19.7%
Level of knowledge		
Good	46	34.8%
Low	86	65.2%
Toxoplasmosis prevention behavior		
Very good	91	68.9%
Good	26	19.7%
Low	15	11.4%

132 respondents, the most age was 24 – 29 years (28.8%), and the highest level of education was high school (46.2%). Most of the respondents have a low level of knowledge about toxoplasmosis, which is 65.2%. The level of knowledge at least is on the mode of transmission of toxoplasmosis, especially through cat feces. For toxoplasmosis prevention behavior, most respondents have very good toxoplasmosis prevention behavior, namely 68.9%. The preventive behaviors carried out sequentially the most are avoiding the consumption of raw/undercooked meat, washing hands after contact with the ground, and consuming washed fruits and vegetables.

Relationship between knowledge level and toxoplasmosis prevention behavior

In table 2, it can be seen that the respondents with a good knowledge level are more likely to have very good preventive behavior compared to respondents with less knowledge. The chi-square test results obtained a p-value=0.867, where the p-value >0.05, so it can be concluded that there is no significant relationship between the level of knowledge about toxoplasmosis and toxoplasmosis prevention behavior in mothers aged 15-49 years.

DISCUSSION

In this study, the frequency of respondents who had less knowledge about toxoplasmosis was 86 respondents (65.2%), while the good ones were 46 respondents (34.8%). This finding indicates that most respondents still have less knowledge about toxoplasmosis infection. Furthermore, most respondents did not know the source of toxoplasmosis infection transmission, especially through cat feces. However, most respondents know this disease has a bad impact on the fetus, although they do not know what kind of impact it will have. This could be due to the lack of information regarding toxoplasmosis infection, considering that this disease is still included in neglected parasitic diseases. Hence, the information provided to health services is inadequate.[14] In addition, access to other sources of information such as social media, newspapers, magazines, and others can also affect the level of knowledge.[15,16] In the working area of the Grogol Petamburan Public Health Center, Jakarta, in the last few years, there has never been any outreach or dissemination of information about toxoplasmosis in the media.

This lack of knowledge about toxoplasmosis is in line with research by Andiappan et al. in Malaysia, the Philippines, and Thailand, where most pregnant women do not have knowledge or are unsure about toxoplasmosis infection.[4] The study of Sumolang et al. in eight health centers in Palu also showed that only 24.1% of women of childbearing age had good knowledge of toxoplasmosis. From this, it can be seen that the level of knowledge about toxoplasmosis in the city is still very low.[8]

Most of the respondents, namely 91

Table 2. Relationship between knowledge level and toxoplasmosis prevention behavior

Variable	Toxoplasmosis prevention behavior (n(%))			P value
	Low	Good	Very good	
Level of knowledge				
Low	10 (11.63%)	18 (20.93%)	58 (67.44%)	0.867*
Good	5 (10.87%)	8 (17.39%)	33 (71.74%)	

*: Chi-square test

(68.9%) in this study, had very good toxoplasmosis prevention behavior. The results of this study are supported by research conducted by Hamou et al., where 95% of pregnant women have good preventive behavior against toxoplasmosis.[17] Research by Moura et al. also shows that most women (>70%) have good preventive behavior against toxoplasmosis infection. This is because most women of childbearing age, especially during pregnancy, are more aware of the possibility of being infected with various diseases so that they carry out good preventive behavior.[18] The results of Iqbal et al.'s study show that women who have given birth and are pregnant >90% avoid most high-risk activities. Toxoplasmosis infection transmission, women who had given birth were more likely to avoid contact with cat feces (p=0.004) and eat cooked meat (p=0.001).[19]

The chi-square test results in this study showed no relationship between the level of knowledge and the behavior of preventing toxoplasmosis with p=0.867. These results are supported by research conducted by Amin et al. that preventive behavior does not have a significant relationship with the level of knowledge about toxoplasmosis (p=0.694).[12] In addition, research conducted by Anggreni et al. with toxoplasmosis prevention behavior with p = 0.106.[10] Research conducted by Andiappan et al. showed that most pregnant women do not have or are less sure about toxoplasmosis infection. However, as many as 83% of respondents practice habits that prevent toxoplasmosis infection on a regular basis.[4]

According to Lawrence Green's theory, a person's behavior towards disease is influenced by various factors, one of which is knowledge which is included in predisposing factors, where a person's level of knowledge will be the basis for personal considerations of an individual that affect the occurrence of a behavior. Therefore, the higher a person's knowledge, the higher the prevention efforts carried out.[19] Contrary to this research, where the level of knowledge is not related to toxoplasmosis prevention behavior. This can be due to the prevention behavior assessed in this study being a generally clean and healthy lifestyle to prevent various infectious diseases. Without realizing it, most of the respondents have done this behavior. This is in line with the research by Hamou et al., where most of the respondents did this behavior without realizing that it was a preventive behavior against toxoplasmosis.[16] During antenatal check-ups during pregnancy, most women also get more information about habits and behaviors that should be done or avoided. Still, without knowing the specifics of the disease so they tend to increase their vigilance and will carry out preventive behavior even though they don't know about toxoplasmosis infection.[17, 20] In addition, several other factors can influence a person's behavior towards preventing disease, such as the presence of a trusted person, the availability of resources, as well as the culture and traditions that exist in the community.[19] However, lack of knowledge can also increase the risk of toxoplasmosis infection. So, health education about toxoplasmosis is still needed. This is supported by studies showing that there is a significant reduction in the incidence of toxoplasmosis (based on serum tests) after providing health counselling regarding toxoplasmosis infection in pregnant women.[9]

This study has several limitations, namely the absence of a specific questionnaire that can assess toxoplasmosis prevention behavior, and not examining other factors that influence toxoplasmosis prevention behavior.

CONCLUSION

Toxoplasmosis prevention behavior in women of childbearing age at the Grogol District Health Center does not depend on the level of knowledge of toxoplasmosis. Further research can be conducted on the level of knowledge of other variables, such as the incidence of toxoplasmosis (with a definite diagnosis of the respondent's antibody titre) and other factors that influence toxoplasmosis prevention behavior. To assess toxoplasmosis prevention behavior, you can use a more specific questionnaire to assess toxoplasmosis prevention behavior.

ACKNOWLEDGMENTS

Thank you to the Grogol Petamburan Health Center, West Jakarta and all respondents, as well as the Faculty of Medicine, Universitas Trisakti.

AUTHORS CONTRIBUTION

NMA contributes to the collection, processing and analysis of data. NMA and DM

contributed to the writing of the manuscript. DM contributed to the improvement of the manuscript.

FUNDING STATEMENT

Funding for this research came from own funds.

CONFLICT OF INTEREST

All researchers have no conflict of interest with the results of this study.

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