

Congenital toxoplasmosis in primary health care: the importance of prevention in the control of a neglected disease

Toxoplasmose congênita na atenção primária à saúde: importância da prevenção no controle de uma doença negligenciada

Toxoplasmosis congénita en la atención primaria de salud: importancia de la prevención en el control de una enfermedad unmet

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ABSTRACT

Background and Objectives: toxoplasmosis is a disease with a great impact on public health, causing sequelae to infected newborns, however, this disease remains neglected in Brazil. The disease is potentially serious when there is congenital transmission. Toxoplasmosis diagnosis during pregnancy is complex and the treatment of the disease in pregnant women is not fully effective. This study aimed at surveying the knowledge of toxoplasmosis in pregnant women cared for at Basic Health Units in the city of Jataí/GO. **Methods:** to promote educational actions with pregnant women on the disease and forms of prevention. The actions were conducted by medical students from the Universidade Federal de Jataí and includes 64 pregnant women. **Results:** we observed a lack of information about the disease and its prevention, and 86% of them did not know all forms of transmission of toxoplasmosis. It was also evident that pregnant women report not receiving instructions about the disease during prenatal care. **Conclusion:** our study evidenced the lack of information on congenital toxoplasmosis in pregnant women, indicating that these actions in primary care are extremely valuable to prevent the disease, in addition to contributing to the training of medical students.

Keywords: Primary Health Care. Disease Prevention. Toxoplasmosis. Congenital Toxoplasmosis.

RESUMO

Justificativa e Objetivos: a toxoplasmose é uma doença com grande impacto na saúde pública, responsável por causar sequelas em recém-nascidos com a infecção, apesar de ainda ser negligenciada no Brasil. A doença é potencialmente grave quando há transmissão congênita. O diagnóstico da toxoplasmose durante a gestação é

complexo e o tratamento da doença em gestantes não é totalmente eficaz. O presente estudo objetivou realizar um levantamento sobre o conhecimento de gestantes atendidas nas unidades básicas de saúde do município de Jataí/GO sobre a toxoplasmose. **Métodos:** promover ações educativas com gestantes sobre a doença e formas de prevenção. As ações foram realizadas por acadêmicos do curso de medicina da Universidade Federal de Jataí com 64 gestantes. **Resultados:** observou-se que faltam informações sobre a doença e formas de prevenção, sendo que 86% das gestantes não conheciam todas as formas de transmissão da toxoplasmose. As participantes relataram também não ter recebido instruções sobre a doença durante o acompanhamento pré-natal. **Conclusão:** o trabalho evidenciou a falta de informações sobre a toxoplasmose congênita por parte das gestantes, indicando que essas ações na atenção primária à saúde são extremamente valiosas para a prevenção da doença, além de contribuir para a formação de acadêmicos do curso de medicina.

Descritores: Atenção Primária à Saúde. Prevenção de Doenças. Toxoplasmose. Toxoplasmose Congênita.

RESUMEN

Justificación y Objetivos: la toxoplasmosis es una enfermedad con un gran impacto en la salud pública, causante de secuelas en recién nacidos con esta infección, a pesar de que todavía se descuida en Brasil. La enfermedad es potencialmente grave cuando hay transmisión congénita. El diagnóstico de toxoplasmosis durante el embarazo es complejo, y el tratamiento de la enfermedad en mujeres embarazadas no es totalmente efectivo. Este estudio tuvo como objetivo llevar a cabo una encuesta sobre el conocimiento de la toxoplasmosis en mujeres embarazadas atendidas en las unidades básicas de salud en la ciudad de Jataí, estado de Goiás (Brasil). **Métodos:** promover acciones educativas sobre la enfermedad con mujeres embarazadas y las formas de prevención. Las acciones fueron realizadas por estudiantes de medicina de la Universidade Federal de Jataí con 64 mujeres embarazadas. **Resultados:** existe una falta de información sobre la enfermedad y las formas de prevenirla, y el 86% de ellas no conocían todas las formas de transmisión de toxoplasmosis. También fue evidente que las mujeres embarazadas informaron que no recibieron instrucciones sobre la enfermedad durante la atención prenatal. **Conclusión:** el estudio puso de manifiesto la falta de información sobre la toxoplasmosis congénita por parte de las mujeres embarazadas, lo que indica que estas acciones en atención primaria son muy valiosas para prevenir la enfermedad, además de contribuir a la formación de estudiantes de medicina.

Palabras clave: Atención Primaria de Salud. Prevención de Enfermedades. Toxoplasmosis. Toxoplasmosis Congénita.

INTRODUCTION

Toxoplasmosis is a zoonosis caused by the protozoan *Toxoplasma gondii* and is one of the zoonoses with the highest diffusion in the world.¹ This disease is a public health problem, as it develops a worrying condition in immunocompromised patients and in congenital transmission of the parasite. Excluding such occasions, the disease usually occurs asymptotically.² The prevalence of *T. gondii* infection in humans is high in Brazil, in general, and is associated with the life habits of the population.³

The congenital variant of toxoplasmosis occurs due to the transplacental passage of the tachyzoite forms of the parasite during pregnancy, thus reaching the circulation and fetal tissues.⁴ In the first trimester of pregnancy, the chances of vertical transmission are lower, but the damage to the fetus is more severe, resulting in fetal death in the uterus or spontaneous abortion. In the third trimester of pregnancy, the chances of transmission are higher; however, the damage to the fetus is less severe. Without treatment, infection during pregnancy results in congenital disease in about 44% of cases, but an appropriate treatment can reduce this risk to 29%.⁵ Infections that go unnoticed at birth or are not treated cause severe eye disease (chorioretinitis) or delayed mental development in the second or third

decade of the child's life.⁴

Congenital toxoplasmosis can cause irreversible lesions in the fetus, and the frequency and severity of the disease depends on gestational age.⁶ Maternal infection in the first trimester of pregnancy can cause severe congenital toxoplasmosis, possibly causing Sabin tetrad, in which the fetus presents chorioretinitis in 90% of cases, cerebral calcifications, neurological disorders with psychomotor retardation, and changes in cranial volume (macro and microcephaly).⁴ In addition to primary infection, transplacental transmission of the parasite may occur by reactivation of chronic maternal disease or reinfection when the mother comes into contact with a genetically distinct strain from that which previously infected her.⁶ Therefore, the prevention of infection becomes indispensable even for pregnant women that already have the disease in its chronic phase.

Nevertheless, gestational and congenital toxoplasmosis are extremely neglected conditions. In Brazil, they entered the list of compulsory notification diseases in 2011 (Ordinance GM/MS No. 104, 25/01/2011), but were withdrawn in 2014 (Ordinances GM/MS No. 1,271, of 06/06/2014, and No. 1,984, of 09/12/2014)⁷ and included, again, in 2016 (Ordinance GM/MS No. 204, of 02/17/2016).⁸ However, until May 2020 there were still no records of these diseases in the Notification Diseases

Information System of the Ministry of Health.⁹ This lack of systematized data makes hinders the development of a real epidemiological profile of these diseases, which also has repercussions on an educational, preventive and curative medical care deficit.

The prevention of toxoplasmosis is based on programs involving health promotion and actions related to education and public health.^{2,10,11} The attention of gestational and congenital toxoplasmosis is divided into three stages: primary, secondary and tertiary. Primary care is based on disease prevention measures in pregnant women and on public health education programs. The pregnant woman is instructed to take preventive measures, being instructed on how to identify the disease and what are the risk factors involved in *T. gondii* infection and the development of toxoplasmosis during pregnancy. Moreover, the forms of contamination and the importance of measures aimed at the prevention of gestational toxoplasmosis are addressed.

Our study aimed at conducting a survey on the knowledge of pregnant women attended in the basic health units (UBS) of the municipality of Jataí/GO on toxoplasmosis.

METHODS

The extension actions were developed in 2019 in ten UBS of the urban perimeter of the municipality of Jataí, state of Goiás, in partnership with the Municipal Health Department of the municipality. The actions were performed by medical students from the Universidade Federal de Jataí and had the participation of 64 pregnant women. These actions promote continuing education in health, making pregnant women aware of the importance of prenatal care and hygiene habits, besides allowing medical students to have greater contact with patients and professionals that already work in public health.

Before the actions, the students of the medical course were trained by the coordinating professor, addressing the aspects of gestational and congenital toxoplasmosis and of the approach of pregnant women in primary health care. The actions focused on pregnant women in prenatal follow-up and began with the application of an investigative questionnaire to evaluate their perceptions and knowledge about gestational and congenital toxoplasmosis, hygiene practices and the importance of disease prevention. The women that agreed to answer to the questionnaire signed and informed consent form. The questionnaires were applied while they waited for routine prenatal care. After, a lecture was given to pregnant women about toxoplasmosis, addressing the general aspects of the disease, the forms of transmission of the parasite and its life cycle and disease prevention. The importance of adhering to the treatment (with medical indication) was also addressed in a comple-

te and correct way, in addition to clarifying the doubts of the participants. In these lectures, information booklets developed by medical students were distributed.

The study was approved by the Research Ethics Committee (Opinion No. 3526623; CAAE no. 15605119.0.0000.8155) and the Organizational Contract for Public Action for Teaching-Health, both of the Universidade Federal de Jataí, and by the Municipal Health Department of Jataí.

RESULTS

Considering that the university extension program is related to the social role played by the university and its components, our study provided pregnant women living in the municipality of Jataí/GO with an important source of primary health education, thus bringing knowledge acquired in the academic environment to the community in an accessible way. Such health education actions conducted in the meetings between the executing team and the participants allowed the education of the population based on educational practices, besides transmitting preventive content related to behavior and personal hygiene habits and the environment. This communication strategy provided the strengthening of the bonds between the participants (pregnant women) and the team members, favoring dialogue and reflection, ensuring better results with greater engagement and participation in educational proposals, in addition to improving the understanding of the transmission of infectious diseases. In the case of toxoplasmosis, we could expand preventive measures, with positive future results regarding the reduction of cases in the community.

Of the pregnant women that answered the questionnaire about toxoplasmosis, 33% answered that they had never heard of the disease and 53% did not know that the disease could be transmitted from mother to child during pregnancy (Figure 1). Moreover, 86% of the pregnant women did not select all items in the questionnaire related to the prevention of toxoplasmosis, leading to the belief that they do not know about all forms of transmission of the disease.

Regarding women that answered about the forms of transmission of toxoplasmosis, 44% reported that they did not know how the disease was transmitted. Figure 2 shows the answers from women that marked alternatives (86%).

Regarding the way the disease is approached by health professionals, we observed that 36% of the pregnant women answered that they did not undergo a test for toxoplasmosis (Figure 3), which may be related to the absence of the test or the lack of communication for the pregnant women about the test. In addition, 77% of the pregnant women reported that they did not receive information about the disease during pregnancy in prenatal consultations (Figure 3).

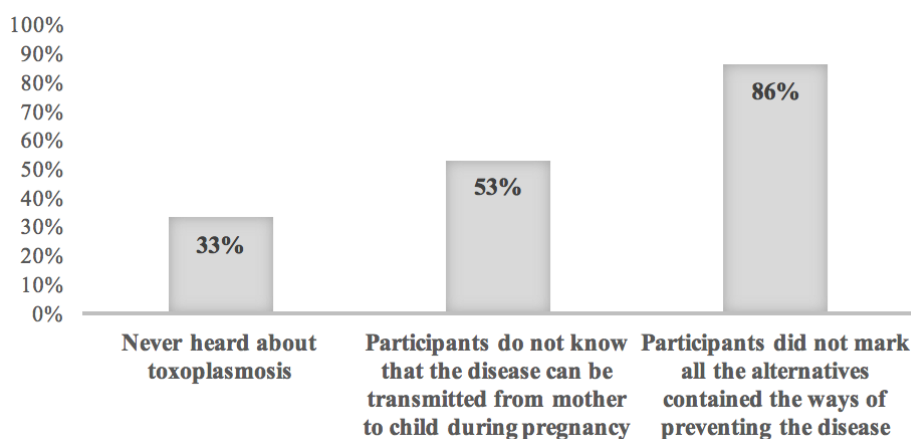


Figure 1. Responses of pregnant women (%) on toxoplasmosis obtained in the questionnaire previously applied to educational actions conducted by medical students. The questionnaires were applied while they waited for prenatal consultation in the basic health units of the municipality of Jataí/GO.

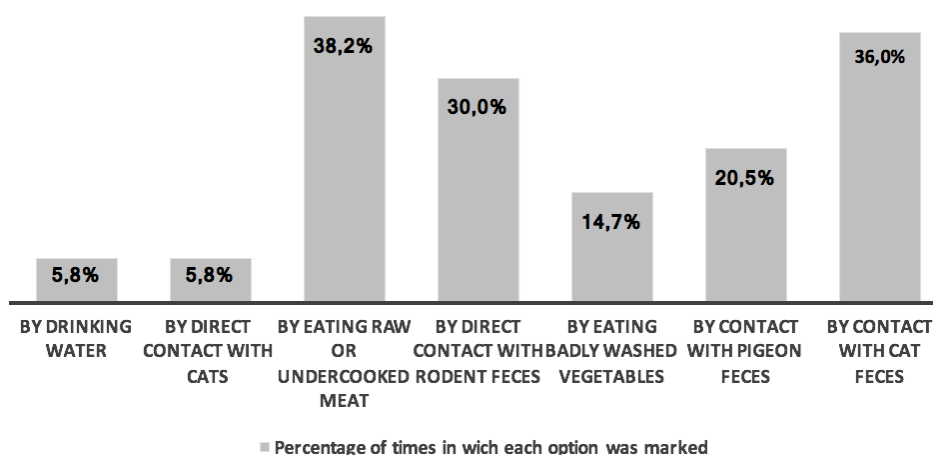


Figure 2. Percentage of times each alternative was indicated by the pregnant women in response to the question about ways to acquire toxoplasmosis present in the questionnaire applied on the approach of toxoplasmosis during prenatal care in the basic health units of the municipality of Jataí/GO.

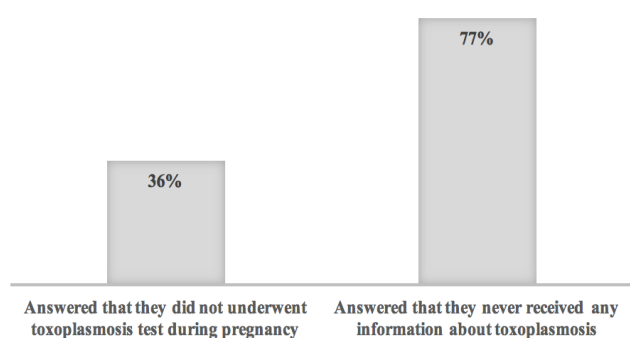


Figure 2. Percentage of times each alternative was indicated by the pregnant women in response to the question about ways to acquire toxoplasmosis present in the questionnaire applied on the approach of toxoplasmosis during prenatal care in the basic health units of the municipality of Jataí/GO.

DISCUSSION

Regarding infectious diseases, such as toxoplasmosis, it is important to emphasize that health education is the best prevention strategy to reduce the infection of pregnant women, since the laboratory and clinical diagnosis of the disease is complex¹¹ and treatment is not fully effective.¹² Treatment of toxoplasmosis during pregnancy is performed with spiramycin, when there is no evidence of fetal infection, or with the association of sulfadiazine/pyrimethamine. The efficacy of spiramycin treatment is controversial: studies have shown a reduction in the incidence of congenital toxoplasmosis in only 60% of cases. Treatment with the association is potentially toxic for both pregnant women and the developing fetus, since pyrimethamine has teratogenic effects.¹²

Due to the severity of the damage caused in new-

borns with congenital toxoplasmosis, primary prevention should be frequently stimulated and improved for the control of infection caused by *T. gondii*, and public health education programs are crucial.⁹ These actions are essential to disseminate information, since there is a lack of knowledge of pregnant women about the disease. Some literature data are consistent with our results and prove the lack of knowledge of pregnant women about toxoplasmosis, such as a study conducted in Maringá, state of Paraná, with 499 women, of whom only 16.23% reported having received information about prevention of this disease during pregnancy.¹³ In Brazil, due to the status of neglected disease, the attention to toxoplasmosis in primary health care is neither systematized nor standardized.¹⁴ Thus, health education has helped toxoplasmosis prophylaxis worldwide. A study conducted in Poland observed that the population's knowledge of risk factors for *T. gondii* infection nearly doubled in four years of health education activities.¹⁵ Moreover, the life habits of the population interfere in the frequency of transmission of toxoplasmosis, and actions aimed at instructing pregnant women on these habits to ensure their safety have a positive impact on the reduction of cases of congenital transmission of the disease.¹² Data show that prophylactic measures performed during pregnancy may decrease fetal infection by up to 70% in women susceptible to *T. gondii* infection.¹⁶

The analysis of the questionnaires also showed the importance of these actions in relation to how the disease is approached by health professionals during prenatal consultations in the UBS. The results indicated the absence of effective information to pregnant women about the disease, evidencing, once again, the importance of actions aimed at primary prevention, also justified by the fact that congenital transmission of toxoplasmosis is associated with abortions and severe sequelae in the developing fetus, such as lesions in the central nervous system (mental and psychomotor retardation, microcephaly and cerebral calcifications) and ocular lesions that may result in vision loss.¹⁷ In addition, considering the importance of toxoplasmosis in the world and especially in Brazil, where its prevalence can reach up to 75%,⁹ preventive actions are extremely important for the control of the disease in pregnant women and the decrease in the occurrence of congenital transmission.

Although most congenital infections result from primary infection acquired during pregnancy, transplacental transmission may occur in some cases of immunocompetent women previously exposed to the parasite, but that are infected with a genetically distinct strain during pregnancy. This reinfection promotes a picture similar to a primary infection, with all the effects of an acute phase infection and potential for congenital transmission already evidenced by several study groups worldwide.^{4,18} Increasing attention to primary prevention measures even in pregnant women previously exposed to *T. gondii* and maintaining an efficient immune system throughout pregnancy is essential, since being cured from a previous acute infection does not guarantee a pregnant woman's safety. Moreover, several case reports show that

reactivated infection in immunosuppressed women due to HIV infection or other causes can also lead to congenital transmission.¹⁹ Another important point is that the knowledge of pregnant women about the disease and the possible impacts on the fetus stimulate the search for tests and follow-up during pregnancy, which favors the early screening of cases of congenital transmission, contributing to the correct management and reducing harm to newborns.²⁰ Furthermore, prevention actions in the public network have their importance corroborated by a recent study that established a direct relationship between the high incidence of *T. gondii* infection and the socioeconomic vulnerability of the Brazilian population, showing that the lack of adequate housing conditions and correct hygiene habits make these women more exposed to parasitic infection, and that this exposure occurs, to a large part, in reproductive age.²¹

Regarding the students of the medical course, the extension actions provide a more humanistic training, which seeks to understand the perspectives of patients and have a better dialogue both with the community and with professionals that already work in the health area, giving tools to students, so that a deeper and more effective doctor-patient relationship can be established, in addition to an interdisciplinary and cooperative work environment.

Health education allows the individuals to acquire more autonomy in their own care, which makes them protagonists and subjects of their own health condition and the people of their social life, positively affecting collective health.²² Consequently, because of the obvious benefits, it is a practice that must permeate health actions. In this perspective, when applying the questionnaire, exchanging information (between pregnant women and project members) and asking questions, the construction of basic knowledge by the pregnant woman is established, especially about the life cycle of the parasite, forms of transmission, prophylaxis, the relationship of the disease with pregnancy and the possible consequences for the fetus. Studies conducted in Brazil concluded that the lack of information about the disease was the most relevant factor for seroprevalence, directly reflecting the higher transmission of the disease, proving that sensitization campaigns should be conducted to prevent the spread of toxoplasmosis.²³

From the detection of acute disease the treatment begins, which is not fully effective to prevent transplacental transmission of the parasite, besides being composed of drugs with teratogenic effects. It is important to emphasize that there is currently no treatment for the chronic phase of the disease.¹²

In this sense, primary care actions contribute to stimulating the initiative and maintenance of prophylactic practices, in addition to clarifying the target audience regarding the infection and its consequences for the health of pregnant women and the fetus. They are also characterized as an important moment for medical students to start and improve interaction with the population, patients and professionals that already work

in health environments, stimulating the development of skills necessary for the execution of the future profession with social responsibility and professionalism.

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Gabriella Leite Sampaio, Letícia Lino da Silva, Flávio de Oliveira Borges and Mariana Bodini Angeloni contributed to the conception and design, the analysis and writing of the article.

Lucas Rodrigues Miranda, Isabela Morais Borges, Arthur Victor Vilela Barros and Mariana Bodini Angeloni contributed to the planning and design, review and final approval of the article.

All authors approved the final version of the manuscript and declared themselves responsible for all aspects of the article, guaranteeing their accuracy and integrity.