



“A Descriptive Study To Assess The Knowledge Regarding Prevention Of TORCH Infection During Pregnancy Among Antenatal Mother Of Selected Hospital Dehradun, Uttarakhand”

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Abstract

Maternal infections during pregnancy remain a major public health concern due to their potential impact on fetal growth and development. TORCH infections—Toxoplasmosis, Other infections (including syphilis, varicella-zoster virus, and parvovirus B19), Rubella, Cytomegalovirus (CMV), and Herpes simplex virus (HSV)—are vertically transmitted infections associated with congenital anomalies, preterm birth, stillbirth, and long-term developmental disabilities. These infections are frequently asymptomatic in pregnant women, leading to delayed diagnosis and missed opportunities for prevention. Preventive measures such as immunization, hygiene practices, safe food handling, and antenatal education are crucial in reducing transmission. **Objectives:** To assess the knowledge regarding prevention of TORCH infections during pregnancy among antenatal mothers and to determine its association with selected demographic variables. **Methods:** A descriptive study was conducted among 60 antenatal mothers attending a selected hospital in Dehradun, Uttarakhand. Participants were selected using a non-probability sampling technique. Data were collected using a structured knowledge questionnaire validated by experts. Descriptive and inferential statistics were used for data analysis. **Results:** The study findings showed that 50% of antenatal mothers had poor knowledge, 48.89% had average knowledge, and only 1.7% demonstrated good knowledge regarding prevention of TORCH infections. **Conclusion:** The study reveals inadequate knowledge among antenatal mothers regarding prevention of TORCH infections. Strengthening health education and counseling during routine antenatal visits is essential to improve maternal awareness and promote better maternal and fetal outcomes.

Keywords

TORCH infections, Antenatal mothers, Knowledge, Pregnancy, Prevention

Introduction:

TORCH syndrome refers to infection of a developing fetus (or) newborn by any of a group of infections agents.' TORCH 'is an acronym meaning toxoplasmosis, other agents (Rubella also known as germen measles cytomegalovirus, herpes simplex infection with any of these agents (Ex. Toxoplasmosis Gondi, rubella virus, cytomegalovirus herpes simplex) may cause a constellation of similar symptoms in affected newborn. These may include fever, difficulty feeding, small areas of bleedings under the skin, causing the appearance of small reddish purplish spots, enlargement of the liver and spleen (Hepato-splenomegaly), yellowish discoloration of skin, whites of the eye, and mucous membrane (jaundice) hearing impairment, abnormalities of the eye or and other symptoms and findings.¹

Each infectious agent may also result in additional abnormalities that maybe variable, depending upon a number of factors (ex: stage of fetal development), TORCH infection is classified as T for Toxoplasmosis, O for Others (syphilis parvovirus HIV), R for Rubella, C for Cytomegalovirus, H for Herpes simplex virus. Toxoplasmosis is a protozoa infection caused by toxoplasma Gondi. In adult infection is transmitted by encysted organism by infected raw or hate required across the placenta.²

During paracythemia, the fetus becomes infected transplacentally. When the mother has an illness early in pregnancy, the fetal infection is most virulent. The afflicted infant may experience mental impairment, cerebral calcification, hydrocephalus, and macrocephalic. Amniocentesis and cardiocentesis are performed to identify IgM antibody in the fetal blood and amniotic fluid if the present infection is verified. Oral ventricular dilation spinoincny ultrasounds are performed at 20–22 weeks.³

Women should be advised to avoid contact with cat and dog litter, wash their hands properly, and cleanse kitchen surfaces after handling raw meat or unpasteurized milk. The spirochete *Treponema palladium* is the cause of syphilis infection, which is spread by intercourse or maternal fetal transmission. A mother who has primary or secondary syphilis during pregnancy has a 50% chance of infecting her fetus. The newborn may get the disease from the placenta or the birth canal.

Congenital syphilis infants may be asymptomatic at birth or exhibit severe abnormalities, such as alopecia, skin lesions, enlarged liver and spleen, maculopapular rash, and malformed nails. Late congenital syphilis can also affect the brain, bones, teeth, and skin. Treatment with intravenous (or intramuscular) antibiotics is advised as soon as possible after diagnosis, with the newborn kept in isolation for the first 24 hours.⁴

Usually, but not always, a herpes rash appears by the end of the first week of life. The virus is found in vesicles, urine, and cerebrospinal fluid (CSF). An exposed infant should be cared for by being kept apart from the mother. Parvo virus B14, often referred to as erythrocyte virus B14, was the first human virus in the class Parvoviridae to be identified. The parvovirus B14 is a single standard DNA virus that is a member of the parvoviridae family. It is also known as fifth illness or erythematous infection. Transplacental is the fetal route.⁵

Need of the study:

Maternal infections during pregnancy remain a significant public health concern due to their potential to cause adverse fetal and neonatal outcomes. TORCH infections—Toxoplasmosis, Other infections (including syphilis, varicella-zoster virus, and parvovirus B19), Rubella, Cytomegalovirus (CMV), and Herpes simplex virus (HSV)—represent a group of vertically transmitted pathogens associated with congenital anomalies, spontaneous abortion, stillbirth, preterm birth, and long-term neurodevelopmental impairment.

The World Health Organization (WHO) estimates the global prevalence of TORCH infections to be approximately 34%. In India, studies published in the *Indian Journal of Medical Microbiology* report a higher prevalence of 39.2%, indicating a substantial burden among pregnant women. Despite this, India lacks a structured national screening program for TORCH infections, contributing to delayed diagnosis and missed preventive opportunities.⁶

Serological evidence indicates IgM positivity rates of 16.4% for *Toxoplasma gondii*, 8.8% for Rubella virus, 10.2% for CMV, and 2.3% for HSV-2, with the highest seroprevalence observed among women aged 21–30 years. Primary TORCH infections during pregnancy are of particular concern, as they are strongly associated with severe fetal anomalies and fetal loss. Prospective studies highlight the need for improved epidemiological understanding of TORCH infections to inform effective prevention strategies.

In a tertiary care-based prospective study involving 120 antenatal women, 93.4% demonstrated serological evidence of one or more TORCH infections. The prevalence of IgG antibodies to HSV was 70%, while seropositivity rates for toxoplasmosis, rubella, and CMV were 11.6%, 8.3%, and 20.8%, respectively. These findings underscore the high frequency of maternal exposure and support the justification for routine prenatal TORCH screening.

In the Indian context, TORCH infections are frequently under-recognized, and maternal awareness of associated complications remains inadequate. Although maternal infection often results in mild or asymptomatic illness, fetal consequences can be severe, and treatment of maternal infection frequently does not alter fetal outcomes. This highlights the importance of early detection, continuous fetal monitoring, and preventive counseling during antenatal care.⁷

Statement of the problem

“A descriptive study to assess the knowledge regarding prevention of TORCH infection during pregnancy among antenatal mother of selected hospital Dehradun, Uttarakhand”.

Objectives:

- 1- To assess the knowledge regarding prevention of TORCH infection during pregnancy among antenatal mother.
- 2- To find out association between level of knowledge regarding prevention of TORCH infection with their selected demographic variables.

Material and Method

Research approach: Quantitative research approach

Research design: Descriptive research design

Population: Population consisted all antenatal mothers .

Target population: The target population is antenatal mothers of Dehradun Uttarakhand

Accessible Population: Accessible Population is all the antenatal mothers attending antenatal OPD of Dr. KKBM Subharti Hospital Dehradun, Uttarakhand.

Research setting: Antenatal OPD of GBCM Subharti Hospital of Dehradun.

Research sample: The sample of the study are antenatal mother who are visiting antenatal OPD in Subharti hospital Dehradun Uttarakhand.

Sample size: 60

Sampling technique: Convenient sampling technique.

Development and description of tool

Section-A: Socio-demographic data

This section prepared for collecting the socio-demographic data of antenatal women that includes details of antenatal women her age, religion, education, occupation, area of residence, dietary habits, gravida and previous knowledge.

Section -B: Self-structured knowledge questionnaire

Knowledge questionnaire on prevention of TORCH infection was developed for assessment of knowledge of pregnant women related to prevention of TORCH infection. It contains six domains, introduction, prevention of toxoplasmosis ,prevention of other infections ,prevention of cytomegalovirus ,prevention of herpes simplex virus, prevention of rubella , each domain contains an individual multiple-choice question- type question, and the total questions are 34 in number. For every correct response, 1 mark was assigned, and for incorrect response, 0 mark was assigned. 34 was maximum score and 0 was minimum score.

Ethical considerations

The study was conducted after the approval of the ethics committee of NSCON Dehradun. A written permission was obtained from the chief medical superintended of Dr. KKBM Subharti Hospital. Informed consent was obtained from each study participant after giving full information about the study. Anonymity was assured to each participant and maintained by the researcher.

Analysis and Result

Section A: Description of demographic profile of study participants.

S.no.	Socio Demographic Variables	Frequency	Percentage %
1	Age (in years)		
	18-24	6	10%
	25-31	43	71.7%
	32-38	11	18.34%
2	Religion		
	Hindu	43	71.66%
	b) Muslim	17	28.34%
3	Area of Residence		
	Urban	37	61.7%
	Rural	22	36.7%
4	Education		
	No formal education	12	20%
	b) Primary education	48	80%
5	Dietary Habits		
	Vegetarian	24	40%
	Non vegetarian	34	56.67%
	Eggetarian	2	3.33%
6	Gravida		
	Primigravida	35	58.33%
	Multigravida	25	41.67%
7	Occupation		
	Government job	4	6.67%
	Private job	3	5%
	Semi government job	1	1.66%
	Homemaker	52	86.67%

8	Previous knowledge regarding TORCH infection? Yes No	6 54	10% 90%
9	source of knowledge (n=6) Social Media Health care worker Family or friends	2 2 2	33.3% 33.3% 33.3%

Table no. 2: Mean, mean percentage, median , and SD of knowledge regarding prevention of TORCH infection.

Knowledge score	Maximun score	Range	Median	Mean±SD	Mean percentage
	29	4-29	11.5	12.17 ± 3.94	35.79%

Table no. 3 Area wise Mean, mean percentage, median, and SD of knowledge regarding prevention of TORCH infection.

Sr. No.	Items	Maximum score	Mean ± SD	Median	Mean %
1	Introduction to torch infection	4	1.77 ±0.810	2	44.17%
2	Regarding prevention of Toxoplasmosis	6	2.63±1.551	2	43.89%
3	Regarding prevention of Others	6	2.33 ±1.145	2	38.89%
4	Regarding prevention of Rubella	6	1.72 ±1.195	1.5	28.61%
5	Regarding prevention of Cytomeglovirus	6	1.60± 1.138	1.5	26.67%
6	Regarding prevention of Hepes simplex virus	6	2.05± 1.227	2	34.17%

Table 4: Level of knowledge score

Level of knowledge N=60		Frequency	Percentage
Good	22-34	1	1.7%
Average	12-21	29	48.3%
Poor	1-11	30	50%

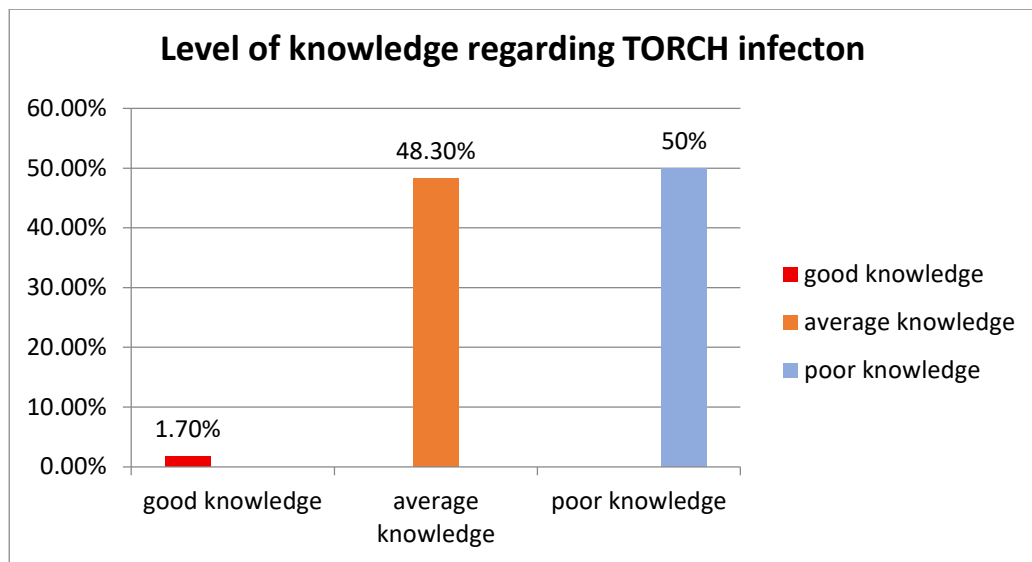


Figure No 01 . Diagram showing the percentage distribution according to their knowledge percentage.

Table No5 : To find out association between level of knowledge regarding prevention of TORCH infection with their selected demographic variables.

S.no	Variables	At & Above median (>11and 11)	Below median (<11)	X ²	Result
1	Age(in years) a)18-28 b)29-38	14 16	14 16	0.06	Not Significant
2	Religion a) Hindu b) Muslim	24 6	19 11	2.052	Not Significant
3	Areaof Residence Urban Rural	17 13	20 10	0.63	Not Significant
4	4. Education No formal education Primary education	4 26	8 22	1.66	Not Significant
5	Dietary Habits a)Vegetarian b)Non vegetarian and eggetarian	12 18	12 18	0.06	Not Significant
6	Gravida a)Primigravida b) Multigravida	17 13	18 12	0.8	Not Significant
7	Occupation Government and semi government Private and homemaker	2 28	3 27	0.21	Not Significant
8	Previous knowledge regarding torch infection a) Yes b) No	2 2	0 2	9.37	Significant

Discussion

The findings of the present study were compared with those of previous studies conducted on the same topic. A total of 150 antenatal mothers were selected using a non-probability purposive sampling technique. Data were collected through a structured knowledge questionnaire. The discussion is presented under the following headings.

1. Socio-demographic profile of antenatal mothers

The socio-demographic characteristics observed in the present study are consistent with earlier research. Boinwad and Gadade (2023) conducted a descriptive study among 150 antenatal mothers in selected hospitals of Pune city to assess their knowledge regarding TORCH infection. Participants were selected using a non-probability purposive sampling technique, and a structured questionnaire was utilized for data collection. The findings revealed that 70% of the antenatal mothers were multigravida, and 48% were in the gestational age group of 28–40 weeks. With respect to knowledge levels, 16% of antenatal mothers had poor knowledge, 44.7% demonstrated average knowledge, and 39.3% had good knowledge regarding TORCH infection.

2. Knowledge regarding prevention of TORCH infection during pregnancy

In the present study, the total knowledge score was 29, with scores ranging from 4 to 29. The mean knowledge score was 12.17 ± 3.94 , corresponding to a mean percentage score of 35.79%. Knowledge levels were categorized as poor (0–11), average (12–22), and good (23–34). The results showed that only 1.7% of antenatal mothers possessed good knowledge regarding the prevention of TORCH infection. Nearly half of the participants (48.3%) had average knowledge, while 50% demonstrated poor knowledge.

Component-wise analysis indicated that 44.72% of antenatal mothers had knowledge related to the introduction of TORCH infection. Awareness regarding the prevention of toxoplasmosis was observed in 43.89% of participants, whereas knowledge related to the prevention of other TORCH infections was present in only 38.89% of antenatal mothers. These findings are supported by the study conducted by Boinwad and Gadade, which similarly reported gaps in knowledge regarding TORCH infection.

Strength

1. Structured questionnaire
2. The sample size calculation was done on the basis of previous research findings.

Limitations

Limitation of study were:

1. Due to small and limited sample size and one study setting, the generalizability of the study's findings was limited.
2. Study findings only disclose knowledge of antenatal mothers.

Recommendations

1. On primigravida mothers research can be performed because they have less knowledge as compared to multigravida mothers.
2. A similar study can be performed on big area population in the community areas.
3. Experimental research can be performed on the effectiveness of structured teaching programmes on the knowledge and practice level of pregnant women in antenatal period.
4. Comparative research can be done on knowledge level and practices related to prevention of torch infection among antenatal mothers.

Conflict of interest: No conflict of interest

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Conclusion

The findings of this study reveal persistently inadequate knowledge regarding the prevention of TORCH infection among antenatal mothers. A very small proportion of participants (1.7%) demonstrated adequate knowledge, whereas nearly half (48.89%) exhibited moderate awareness and half (50%) had poor knowledge. This substantial knowledge deficit underscores an important public health concern, as insufficient maternal awareness may contribute to preventable congenital infections and adverse pregnancy outcomes. Maternal knowledge was strongly associated with prior exposure to information related to TORCH infection prevention, highlighting the critical role of early, continuous, and structured health education. Incorporating standardized, evidence-based educational interventions into routine antenatal care is essential. Nurses and other healthcare professionals play a pivotal role in delivering consistent counseling during every antenatal visit. Strengthening maternal knowledge through targeted nursing-led educational strategies may significantly improve maternal and fetal health outcomes and support broader public health efforts to reduce the burden of congenital infections.

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