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Pregnant women's intestinal parasite infections and related variables in the Dhi Qar Governorate

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Abstract

Background: Parasitic infections are widespread and diverse in many regions of the world, and these infections often come from eating foods contaminated with infective stages of the parasites. Pregnancy is a period in which the pregnant mother's immunity decreases, so parasitic infection increases with the increased need for food and weak immunity during this period. Although there are many studies on parasitic diseases during pregnancy, many studies did not shed light on the relationship between intestinal parasites and infection and their risks to pregnancy, so they were targeted by our current study.

Methods: This study was conducted on samples from pregnant women with severe diarrhea in hospitals in Thi-Qar governorate, 185 samples were collected for the age group (19-39) years and divided into infected (154) and non-infected (31), and (115) samples for the age group (41-51) years and divided into infected (78) and non-infected (37). Information was gathered about residence, age, type of food consumed during pregnancy, and the infection was diagnosed by direct smear method and sedimentation technique from period Februarys 2023 to January 2024.

Results: The current study demonstrated a correlation between age groups and infection, for instance, the highest percentage of infection in the age group (19-40) as the percentage of infection was (83.24%) compared to the age group (41-51), with a percentage of (67.83%). The age group (41-51) recorded a higher percentage of anemia (84.35%) compared to the age group (19-39) with a percentage of (73.51%). Data indicate that infection with *Entamoeba histolytica* and *Giardia lamblia* is related to age and that the infection rate is higher in the age group (19-40) compared to the age group (41-51).

Keywords: Intestinal parasitic infections, pregnant women's, anemia

Introduction

Global public health problems, intestinal parasite infections are widespread and very morbid; many of these cases affect women who are in pregnancy a long time. The category individuals who are more vulnerable to these diseases is pregnant women. (Animaw *et al.*, 2021) ^[1] and intestinal parasite infections affect more than 1 billion people in poor societies worldwide. Protozoa includes the parents of Helminths and contaminated water is one of the most common vectors of intestinal parasitic diseases (Hernández *et al.*, 2019) ^[4]. The prevalence of disease has been much higher in countries without health and hygiene systems than in developed countries with good health realities, accounting for about one third of the world's deaths per year. (Khanam *et al.*, 2019) ^[6]. Pregnant women can be infected and the effect is more severe due to leads to vomiting, fever, and bloody diarrhea symptoms causes early foetal birth due to mother's immunodeficiency syndrome (Karadbhajne *et al.*, 2020) ^[5]. Complex immunological changes caused by pregnancy are known to affect the probability of infection during pregnancy, since the first reaction to parasitic invasion during pregnancy is a cellular response consisting of the turning on of eosinophils and basophils and fat cells mast cells. The pregnancy reduces the risk of cell-mediated immunity while remaining a mixed immune, Humoral immunity. These schizophrenia changes enable women to accept the fetus during the fetal uterus phase. This in turn affects the immune system of pregnant mothers, which increases the likelihood of certain parasites such as *Giardia lamblia* and *Entamoeba histolytica*, which infects the membrane of the intestinal intestine, causing malabation, diarrhoea and anaemia (D'alauro *et al.*, 1985) ^[3]. Parasitic infections such as *E. histolytica*, *Giardia lamblia* and worms such as *Ascaris lumbricoides*, *Trichuris trichiura*, and systolic worms such as *Ancylostoma duodenale*, *Necator americanus*, and *Enterobius vermicularis* cause disturbing symptoms of public health problems and concerns, as the spread of these parasites may be without obvious symptoms if in few numbers, but if they are more numerous within the body, they can cause

delayed pregnancy or directly or indirectly affect mother and fetus, such as retardation of fetuses and placental development during pregnancy, anorexia, anaemia, loss of elements such as iron and zinc, and lack of capacity, as pregnant women often suffer more from these symptoms than their non-pregnant counterparts (Yakasai and Umar, 2013) [12]. Pregnant women in several rural areas of India have been infected by *E. histolytica* with cases of bloody diarrhea, vomiting and fever febrile of pregnant women in those areas, although the disease affects different groups, but its impact is even more serious because of the vulnerability of the mother during pregnancy (Karadbhajne et al., 2020) [5].

Material and Methods

- 1. Collection of Data:** This study was conducted on samples from pregnant women with severe diarrhea in hospitals in Thi-Qar governorate, 185 samples were gathered for the age group (19-39) years and divided into infected (154) and non-infected (31), and 115 samples for the age group (41-51) years and divided into infected (78) and non-infected (37). Information was collected about residence, age, type of food consumed during pregnancy.
- 2. Diagnosis:** The infection was diagnosed By direct smear method and sedimentation technique according Stanley (2003) [9] from period February 2023 to January 2024.
- 3. Statistical analysis:** Graph Pad Prism 10 for all statistical

tests, $p < 0.05$ was considered significant. Significant differences in figures were noted by asterisks: $P < 0.05$ (*), $p < 0.01$ (**), Parametric data were presented as mean SEM and were analyzed using Two-sided unpaired Fisher's exact test and Chi-square.

Results

1. Intestinal parasite infection according to age groups

The characteristics of the study sample include (300) pregnant women who were examined and found to be infected with intestinal parasites, according to their residence, as shown in the Table 1 and The results of the current investigation indicated a connection between age groups and infection in pregnant women which may be vulnerable to parasitic infection. For instance, the highest infection rate was in the age group (19- 40) for pregnant women as the percentage of infection was (83.24%) compared to the age group (41-51), with a percentage of (67.83%). Which means that the infection was more in the younger age groups than in the older age groups, and this is also related to the incidence of pregnancy in the age groups less than forty years, and this is confirmed by the number of patients, since the group older than forty had a lower number of patients compared to the group less than forty years, and this in turn reduces the chance Pregnancy and exposure to intestinal infection. As in Figure 1.

Table 1: characteristics of the study sample (300), pregnant women with IPIs (232), no-IPIs (68), and associations with maternal factors

	Total pregnant women (n = 300)	IPIs (n = 232)	no-IPIs (n = 68)	p value*
Age				
(19-39)	185	154 (83.24%)	31 (16.76%)	0.0028
(41-51)	115	78 (67.83%)	37 (32.17%)	
Residence				
Urban	185	145 (62.5%)	40 (58.8%)	0.002
Rural	115	87(37.5%)	28 (41.1%)	

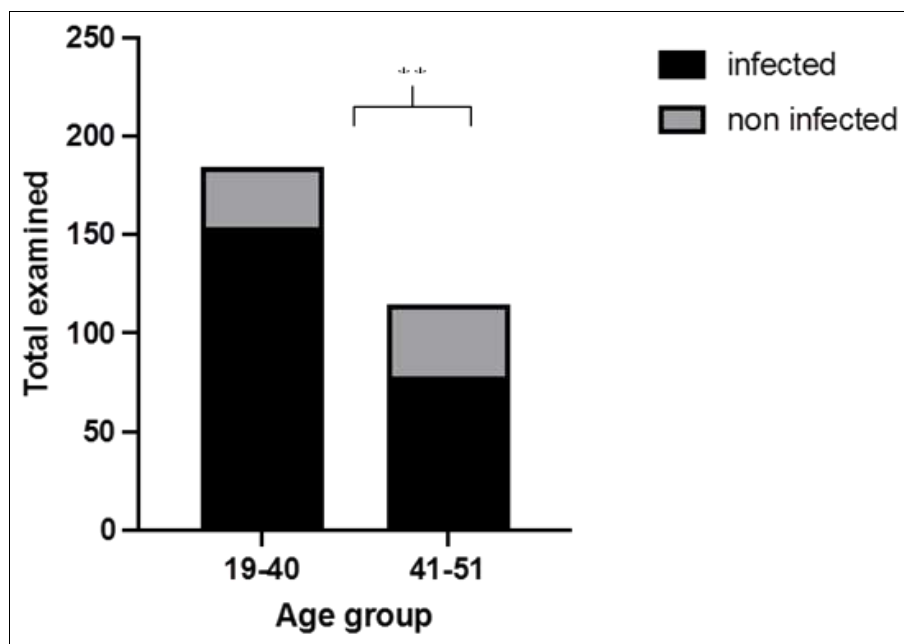


Fig 1: This data shows that (19- 40) age group has more infection rate compared to the (41-51) age group

2. The relationship between anemia and age group

The results of the study showed an association with intestinal parasite infection and anemia during pregnancy, as

shown in Figure 2. This data shows that (41-50) age group has more infection rate compared to the (19-40) age group.

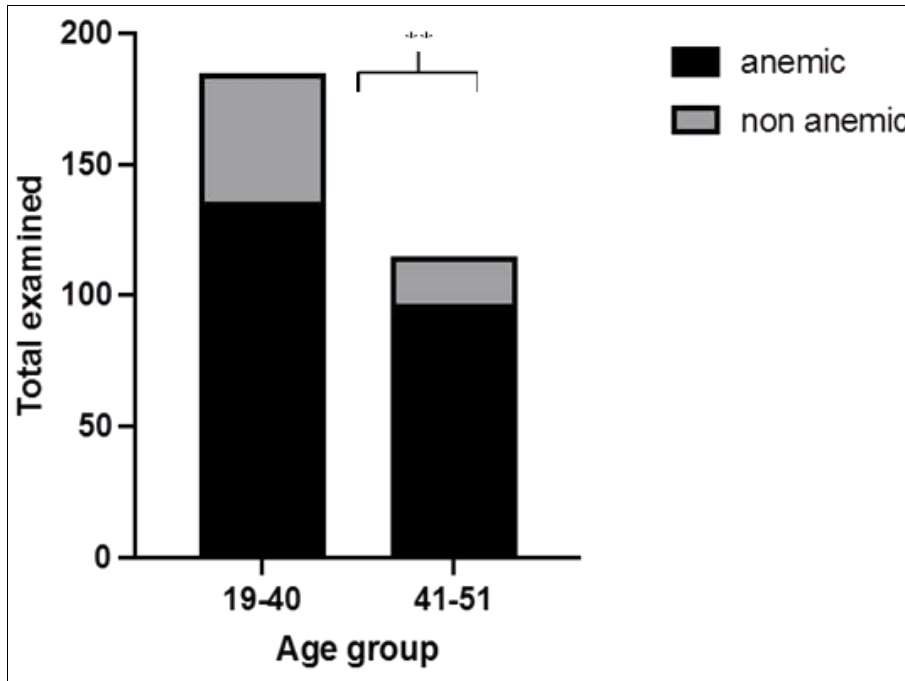


Fig 2: This data shows that (41-51) age group has more anemic rate compared to the (19-40) age group

3. Types of intestinal parasite infection in pregnant mothers

Data from the current study indicate that infection with intestinal parasites such as *Entamoeba histolytica* and *Giardia lamblia* is related to age and that the infection rate is higher in the age group (19-40) compared to the age group (41-51). As shown in Table 2 and Figure 3.

Table 2: Type of parasitic infections and some mixed infections in pregnant women

Types of parasites	Species of parasite	Age (19-39)	Age (41-51)
Protozoa	<i>Entamoeba histolytica</i>	143	53
	<i>Giardia lamblia</i>	113	23
Helminthic	<i>Ascaris lumbricoides</i>	43	25
	<i>Strongyloides stercoralis</i>	54	32
	<i>Hymenolepis nana</i>	23	11
Mixed	<i>Mixed infection</i>	137	63

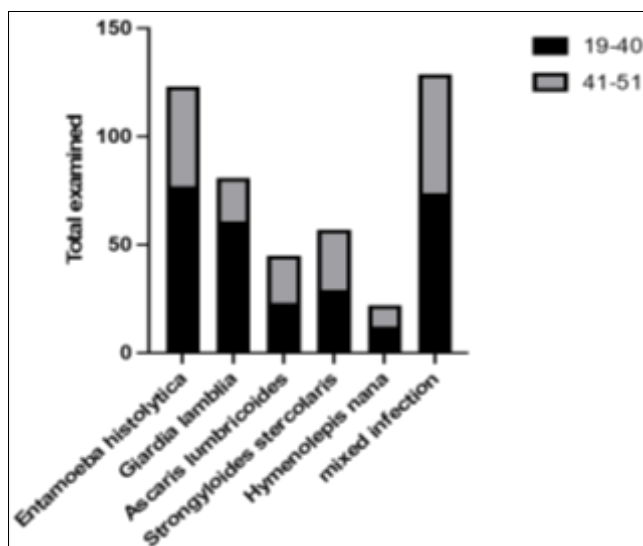


Fig 3: This data shows that *Entamoeba* and *Giardia* infection are associated with age and the infection rate is more in (19-40) age group compared to (41-51) age group

Discussions

The global spread of parasitic infections is attributed to the increased movement and travel of infected food items. These infections are not limited to regions that have historically been endemic. Pregnant women in endemic areas have a prevalence of parasitic infection ranging from 24 to 70%; of these, 10% have several parasites during pregnancy, which means that they need to eat more at this time., and immune system imbalances all play a role in the development of parasite infections, which may be linked to detrimental outcomes such as anemia. This occasionally might result in higher death rates, and the presence of parasitic worms during pregnancy might also cause immunological disorders, which could be of assistance with increased pregnancy disorders and thus affect maternal immunity and the child's immunological reaction following birth. Still, the use of approved treatments to prevent parasite infection during pregnancy has not raised any safety issues. (Mohan *et al.*, 2020) [7].

The results of the study showed an association with intestinal parasite infection and anemia during pregnancy. This data shows that (41-50) age group has more infection rate compared to the (19-40) age group. The results of the study showed a relationship between infection with intestinal parasites and anemia during pregnancy. Data indicate that the age group (41-50) has a higher infection rate compared to the age group (19-40). This is due to pregnancy occurring in the age period over forty, which is more dangerous and more susceptible to cases of anemia and iron deficiency in the blood, as many studies are linked to parasitic infections during pregnancy and cases of anemia, as in the study (Brooker *et al.*, 2008) [2]. As shown (Scholz *et al.*, 2009) [8]. The term "microcytic anemia" may not accurately describe the anemia triggered by intestinal parasites. Research has demonstrated a correlation between megaloblastic anemia caused by a vitamin B12 deficiency and fish tapeworm *Diphyllobothrium latum* infection. It is believed that the parasite attaching to the terminal ileum interferes with the usual binding of vitamin B12 with the

intrinsic factor, impairing absorption and causing the B12 deficit that causes megaloblastic anemia in this instance. Furthermore, damage to intestinal parasites, intestinal parasitic infections, anemia, and iron deficiency, as well as kidney, protein, folic acid, and zinc, may all result in underweight pregnancy, intrauterine growth retardation, development retardation during pregnancy, and its continued popularity, weight. At birth, low birth weight, due to indirect fetal mortality during pregnancy (Tulu *et al.*, 2019) ^[10].

Our current study also agrees with what (Weigel *et al.*, 1996) ^[11] reported about the prevalence of asymptomatic intestinal parasitic infections during pregnancy, as 93% of cases were infected with at least one type of pathogenic intestinal parasite, among which 88% were *Entamoeba histolytica* and were associated with Parasitic burdens due to low hemoglobin in the mother's serum and iron deficiency, which led to decreased fetal growth in particular, and diminished intrauterine growth, as the researcher demonstrated that The presence of an asymptomatic intestinal parasite infection is a possible risk factor for anemia that arises from both delayed fetal growth and iron shortage in the mother.

Intestinal parasites such as *E. histolytica*, *G. lamblia* cause disturbing symptoms of public health problems and concerns, as the spread of these parasites may be without obvious symptoms if in few numbers, but if they are more numerous within the body, they can cause delayed pregnancy or directly or indirectly affect mother and fetus, such as retardation of fetuses and placental development during pregnancy, anorexia, anaemia, loss of elements such as iron and zinc, and lack of capacity, as pregnant women often suffer more from these symptoms than their non-pregnant counterparts (Yakasai and Umar, 2013) ^[12].

Conclusion

Intestinal parasitic infections pose risks during pregnancy, especially for age groups over forty years. Therefore, this health aspect must not be neglected and pregnant women should be followed up with full health care during the period of intestinal parasite infection.

References

1. Animaw Z, Melese A, Demelash H, Seyoum G, Abebe A. Intestinal parasitic infections and associated factors among pregnant women in Ethiopia: A systematic review and meta-analysis. *BMC Pregnancy and Childbirth*. 2021;21(1):1-13.
2. Brooker S, Hotez PJ, Bundy DA. Hookworm-related anaemia among pregnant women: A systematic review. *PLoS neglected tropical diseases*. 2008;2(9):e291.
3. Frederice D, Lee RV, Pao-in Krisana, Khairallah M. Intestinal parasites and pregnancy. *Obstetrics & Gynecology*. 1985;66(5):639-643.
4. Hernández PC, Morales L, Chaparro-Olaya J, Sarmiento D, Jaramillo JF, Ordoñez GA. Intestinal parasitic infections and associated factors in children of three rural schools in Colombia. A cross-sectional study. *PLoS One*. 2019;14(7):e0218681.
5. Karadbhaje P, Tambekar A, Gaidhane A, Syed ZQ, Gaidhane S, Patil M. Amoebiasis in pregnant woman: A case report. *Medical Science*. 2020;24(104):1814-1817.
6. Khanam N, Wagh V, Gaidhane AM, Quazi SZ.

- Assessment of work-related musculoskeletal morbidity, perceived causes and preventive activities practiced to reduce morbidity among brick field workers. *Indian Journal of Community Health*, 2019, 31(2).
7. Mohan S, Halle-Ekane G, Konje JC. Intestinal parasitic infections in pregnancy—A review. *European Journal of Obstetrics & Gynecology and Reproductive Biology*. 2020;254:59-63.
 8. Scholz T, Garcia HH, Kuchta R, Wicht B. Update on the human broad tapeworm (Genus *Diphyllobothrium*), including clinical relevance. *Clinical microbiology reviews*. 2009;22(1):146-160.
 9. Stanley SL. Amoebiasis. *The lancet*. 2003;361(9362):1025-1034.
 10. Tulu BD, Atomssa EM, Mengist HM. Determinants of anemia among pregnant women attending antenatal care in Horo Guduru Wollega Zone, West Ethiopia: Unmatched case-control study. *PLoS One*. 2019;14(10):e0224514.
 11. Weigel MM, Calle A, Armijos RX, Vega IP, Bayas BV, Montenegro CE. The effect of chronic intestinal parasitic infection on maternal and perinatal outcome. *International Journal of Gynecology & Obstetrics*. 1996;52(1):9-17.
 12. Yakasai AI, Umar UA. A review parasitic infestation in pregnancy. *Asian journal of natural and applied sciences*. 2013;2(1):31-38.