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Short Communication

Double Burden of Anemia and Soil Transmitted Helminthes among Pregnant Women Attending Antenatal Care in Shenan Gibe Hospital, Jimma Zone, Ethiopia

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Abstract

Background: Soil transmitted helminthes (STHs) infections are among the most common infection mostly affects the poorest and most deprived community. Anemia caused by STH infection becomes most frequent complication related to pregnancy. *Ascaris lumbricoides*, *Tricuris triciuria*, and *Ancyclostoma duodenale* and *Nectar americanus* are the well-known of these parasites which cause morbidity and mortality in developing countries like Ethiopia.

Objective: Objective of this study was to determine the prevalence of STHs and its association with anemia among pregnant women attending ante-natal care clinic in Shanen Gibe Hospital, Jimma.

Method and material: A cross sectional study on prevalence of STHs and its association with anemia was conducted among conveniently selected pregnant women attending ante-natal care in Shanen Gibe Hospital from April 25 to May 25, 2019.

Result: A total of 400 pregnant women were enrolled in this study with the age range 18-45 years old. Overall prevalence of soil transmitted helminthes was 30.4% with the predominance of *A.lumbricoids* (16.3%), followed by hook worm (6%). The overall prevalence of anemia was 34.7% where mild anemia is 26% of the total study participants.

Conclusion and recommendation: The prevalence of STHs and anemia was higher in the study area. Different socio demographic and associated factors were identified as contributors of STH h infection and anemia among pregnant women. The finding of our study indicate that fecal examination for any of STH and blood examination for anemia should be included in parameter for antenatal care diagnosis. The policy makers and concerning bodies should give attention for mass drug administartion at least once annual for pregnant women and child breaning age women.

INTRODUCTION

Soil transmitted intestinal helminthes infect about 1/4thof the world population. It is almost ubiquitous over large area of the tropics and subtropics and persistently of high prevalence in association with other dietary deficiencies it contributes to significant morbidity and mortality mainly in developing countries [1].

Soil transmitted helminthes infections are among the most common infections primarily affecting the poorest sectors of the population. In 2010, an estimated 819 million people worldwide were infected with *A.lumbricoides,* 464 million with *T.triciuria,* and 438 million with Hook worm [2].

Helminthes increase anemia in pregnancy, the results of this are low pregnancy weight and intrauterine growth retardation, followed by low birth weight, with its associated greater risks of infection and higher prenatal mortality rates. An estimated 44 million pregnant women have hook worm infections which can cause chronic loss of blood from the intestine and predisposes the women to develop iron deficiency anemia [3].

Several studies showed that significant differences in a prevalence of anemia in between developed countries and under developed (developing) countries showed that 9% and 45% respectively. Children and women of reproductive age are most at risk, with global anemia prevalence estimates of 47% in children younger than 5 years, 42% in pregnant women and 30% in non-pregnant women aged 15-49 years [4].

The relationship between soil transmitted helminthes and anemia has been studied well in different countries. Furthermore there is evidence that iron deficiency anemia increased

susceptibility to infection and anemic infant and children develop less than optimally with regard to learning and school achievements [5].

Many studies suggested that anemia in pregnant women depends on many potential risk factors beside the normal physiological and immunological factors. For instance mother's age, number of pregnancy, socio-economic status and trimester as potential risk factors of anemia. In determining their anemia status hemoglobin concentration in the blood is the most dependable pointer [6].

Among others the role of hook worm in causing anemia is studied well in different countries. Hook worms injure their human host by causing blood loss leading to iron deficiency and protein malnutrition. The parasite induces blood loss directly through mechanical rupture of host capillaries and arterioles followed by the release of a battery of pharmacologically active polypeptides including anticoagulants, antiplatelet agents, and antioxidants [7].

Normal hemoglobin distribution vary by age and sex and so do anemia threshold (i.e;hemoglobin concentration below which individuals are considered anemic). Among women of reproductive age, this threshold is 11g/dl for pregnant women and 12g/dl for nonpregnant women [8].

Hook worm is reported to be highly prevalent in Illubabor, Keffa, and Wollega districts of Ethiopia [9].

As study done at Asendabo town, Jimma zone showed that clinical manifestations of hook worm disease are the consequences of chronic intestinal blood loss. Iron deficiency anemia occurs and hypoalbuminemia develops when blood loss exceeds the intake and reserves of host iron and protein [10]. So the purpose of the current study is to determine the prevalence of soil transmitted helminthes and its association with anemia among pregnant women attending ANC at Shanan Gibe Hospital.

RESULTS

From the total 408 calculated sample size, 98.04% (400) pregnant women were voluntarily participated in the current study. The overall prevalence of soil transmitted helminthes was 27.5 % (110/400). Five species of soil transmitted helminthes were identified, out of these the *Ascaris lumbricoides* was the predominant species 16.5 % (66/400), followed by hook worm species 6% (24/400), *Trichuris trichuria* 2.5 % (10/400), *Strongyloides stercolaris* 1.25 % (5/400) and *Enterobius vermicularis* 1.25 %(5/400). In this study participants were further examined to assess the level of the blood hemoglobin. 65.25 % (261/400) had hemoglobin level >11, 26.25 % (105/400) were having moderate anemia and 8.5 % (34/400) had mild anemia. Participants having both Soil transmitted helminthes and anemia were 19.25 % (77/400). There was strong association between Soil transmitted helminthes infection and hemoglobin level (Table 1).

In the table above high prevalence (12.25%) of STHs was observed in the age group of 26-35, followed by 8.5% and 6.25% in the age range of 18-25 and 36-45 respectively.15.25% rural and 12.25% urban residents were positive for STHs. High prevalence(12.5%) was recorded on education level 1-8, 3.25%, 2.5%,4% and 5.25% positive results were recorded for illiterates, read and write, 9-12 and >12 education levels respectively. with respect to religion high prevalent were Muslims(19%) followed by orthodox(7%), protestant(0.75%), waqefata(0.5%) and catholic(0.25%) (Table 2). From the table above variables only frequent coffee and tea consumption has significant association with anemia ($p<0.05$).

CONCLUSION

According to this study the relation between soil transmitted infection and hemoglobin was statistically significant ($p<0.05$). Among participants who are positive for soil transmitted 19.25% were recorded to have less than normal hemoglobin. The difference of results between this study and above different studies might be due to different geographical locations different climate, socio-economic differences of the people and of the countries. Since anemia is prominent health problem in the rural area further study should be conducted to determine causes

Table 1: Socio demographic characteristics of pregnant women attending ANC in Shanan Gibe Hospital, Jimma, South west Ethiopia, April 25-May 25, 2019.

Study variables		Frequency	Percentage
Age	16-25	116	29%
	26-35	204	51%
	36-45	80	20%
Residence	Urban	227	56.8%
	Rural	173	43.2%
Educational status	Illiterate	26	6.5%
	Read and write	58	14.5%
	1-8	166	41.5%
	9-12	87	21.8%
	>12	63	15.2%
Religion	Muslim	236	59.0%
	Orthodox	104	26.0%
	Protestant	40	10.0%
	Catholic	13	3.2%
	Waqefata	7	1.8%

Table 2: prevalence of anemia and associated factors among pregnant women at Shenan Gibe Hospital.

Variable		>11(normal)	9-11 (mild anemia)	<9(moderate anemia)	Total	P-value and chi-square
History of caught by malaria	Yes	88	26	10	124	0.240, 2.851
	No	173	79	24	276	
Other chronic disease	Yes	15	6	1	22	0.791, 0.468
	No	246	99	33	378	
Frequent coffee and tea consumption	Yes	188	97	29	304	0.037, 6.57
	No	73	18	5	96	
Gestational period of pregnancy	First	111	40	9	160	0.353, 4.414
	Second	112	46	20	178	
	Third	38	19	5	62	

other than soil transmitted helminthes and their magnitude, Mass drug administration should attain atleast one annually.

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AUTHORS CONTRIBUTION

DE was idea generate, develop the project, data analysis; and BW analysis the data, write up and data collection.

REFERENCES

1. Pawlowski ZS, Schad GA, Stott GJ. Hookworm infection and anemia approach to prevention and control.WHO,Geneva.1991.
2. Pullan RL, Smith JL, Jasrasaria R, Brooker SJ. Global numbers of infection and disease burden of soil transmitted helminthes infections in 2010. Parasit Vectors. 2014; 21: 37.
3. Sackey ME, Weigel MM, Armijos RX. Predictors and nutritional consequences of intestinal parasitic infections in rural Ecuador. J Trop Pediatr. 2003; 49: 17-23.
4. Yarlini Balarajan, Usha Ramakrishnan, Emre Ozaltin, Anuraj H Shankar, SV Subramanian. Anemia in low-income and middle-income countries. Lancet. 2011; 378: 2123-2135.
5. Obsie N, Mossie A, Gobena T. Magnitude of anemia and associated risk factors among pregnant women attending antenatal care in ShallaWoreda, West Arsi Zone, Oromia Region, Ethiopia. Ethiop J Health Sci. 2013; 23: 165–73.
6. Nik Rosmawati NH, Nazri MS, Ismail M. The rate and risk factors for anemia among pregnant mothers in Jerteh Terengganu, Malaysia. J Community Med Health Educ. 2012; 2: 5.
7. Hotez, Pritchard, Stoltzfus, et al. Hookworm Infection Sci. 1997.
8. de Benoist B, McLean E, Egli I, Cogswell M. Worldwide prevalence of anemia 1993–2005. WHO global database on anemia. 2008.
9. Amare Mengistu, Solomon Gebre-Selassie, Tesfaye Kassa. Prevalence of intestinal parasitic Infections among urban dwellers in southwest Ethiopia. Ethiop J Health Dev. 2007; 21: 12–17.
10. Crompton W. The public health importance of Hookworm disease. Parasitology. 2000; 121: S39-S50.