Wolkite University

We Strive for Wisdom!

PREVALENCE OF SOIL TRANSMITTED HELMENTHES AMONG PATIENTS VISITING WOLKITE HEALTH CENTRE, SOUTHERN CENTRAL ETHIOPIA

BY:

HABTAMU SEMAHEGN 184/10

MINTESNOT MIJAN 215/10

MOHAMMED HUSSEN 216/10

MOHAMMED TAJU 217/10

MUNIR KETEMA 198/09

A RESEARCH PAPER SUBMITTED TO THE DEPARTMENT OF MEDICAL LABORATORY SCIENCES, COLLEGE OF MEDICINE AND HEALTH SCIENCES, WOLKITE UNIVERSITY; IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF BACHELOR OF SCIENCE IN MEDICAL LABORATORY SCIENCES.

August, 2021

Wolkite, ETHIOPIA

WOLKITE UNVERISTY

COLLEGE OF MEDICINE AND HEALTH SCIENCE

DEPARTIMENT OF MEDICAL LABORATORY SCIENCE

PREVALENCE OF SOIL TRANSMITTED HELMENTHES AMONG PATIENTS VISITING WOLKITE HEALTH CENTRE, SOUTHERN CENTRAL ETHIOPIA

BY:

HABTAMU SEMAHEGN 184/10

MINTESNOT MIJAN 215/10

MOHAMMED HUSSEN 216/10

MOHAMMED TAJU 217/10

MUNIR KETEMA 198/09

ADVISOR: - FITSUM BEKELE (BSc, M.Sc.)

August, 2021

Wolkite, ETHIOPIA

ACKNOWLEDGEMENT

First of all, we would like to thanks our adviser Mr. Fitsum Bekele (BSc, MSc) for his precious and constructive suggestion and guidance from the beginning to the completion of this research proposal.

Also we would like to thank Wolkite University College of Medicine And Health Science Department of Medical Laboratory Science for giving us this opportunity to develop the proposal.

We would like to express our thanks to Wolkite Health Centre which help us for collecting data.

ABSTRACT

BACKGROUND: Soil transmitted helminthes infections are among the most common infections worldwide and affect the poorest and most deprived communities *Ascaris lumbricoides, Hook worm, Trichuris trichuria* and *Strongloides stercorali*s are the well-known of these parasites which cause morbidity and mortality in developing countries like Ethiopia.

OBJECTIVES: The objective of this study is to determine the prevalence of soil transmitted helminthes infection among patients visiting Wolkite Health Centre, southern central Ethiopia.

METHODOLOGY: A cross sectional study conducted from June 05 - 30, 2021 to determine the prevalence of soil transmitted helminthes infection among patients visiting Wolkite Health Centre, southern central Ethiopia.

A total of 245 of study participants who came to the Health Centre for stool examination was included, consecutively. Socio-demographic data was collected using structured questionnaires. Stool specimen was collected from each study participant and examined by direct wet mount method.

RESULT: In this study a total of 245 study participants were involved. Out of these 112(45.7%) were male and 133(54.3%) were female. The overall prevalence of intestinal parasite was 6.53%. Three species of intestinal parasite were identified. Among these species the highly prevalent one was *hook worm* (5.3%) followed by *Trichuris trichuria* (0.81%) and Ascaris *lumbricoide* (0.40%). In this study (6.53%) of participants who were positive for soil transmitted helminthes.

CONCLUSION: Soil transmitted helminthes infections are prevailed at all sex, age and residence.

KEY WORDS: Soil transmitted helminthes infections

: prevalence

Contents

Chapter one: introduction

1.1 Background…….1

1.2 statement of the problem……...3

1.3 significance of the study……..……4

Chapter two: literature review……...…….5

Chapter three: objective

3.1 general objective……..……9

3.2 specific objective……..9

Chapter four: methodology

4.1 study design……..10

4.2 study area and period……..10

4.3 population…….10

4.4 sample size and sampling technique……...10

4.5 study variables……..11

4.6 method of data collection……11

4.7 specimen collection……..12

4.8 data analysis and interpretation……12

4.9 ethical consideration……12

Chapter five: results……...13

Chapter six: discussion……..16

Chapter seven conclusion and recommendation

7.1 conclusion…….18

7.2 Recommendations……18

References……...19
Annexes

Annex-1……...21

Annex-2……...22

Annex-3……...23

Annex-4……...24

CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND

Soil transmitted helminthes where immature stages (eggs) require period of development or incubation in the soil they become infective. The common and well known of such parasites are *Ascaris lumbricoides, hook worm, Trichuria trichuris* and *Strongloides stercoralis* (1). These parasites cause morbidity and mortality in poor countries.

The soil transmitted helminthes are worms found in the intestine of man or animal. They are among the most common and widely distributed parasites of man. Transmission of intestinal parasites takes place directly or indirectly through fecal contaminated soil. Although they are called soil transmitted helminthes, they can also be transmitted through feacally contaminated water such as eggs of *A.Lumbricoide, T.trichuria* and *hookworm.* The larva of hookworm and *S.sercoralis* penetrate the skin and enter the body. The majority of the parasites don't require intermediate hosts. (2, 3)

Soil transmitted helminthes infections are a major global health burden, with an estimated 3.8 billion persons infected, 720 million clinical case, and an estimated 135,000 deaths attributed to clinical complications annually. Soil transmitted helminthes infections in pregnancy have been associated with iron deficiency, maternal anemia, and impaired nutritional status as well as decreased infant birth weight, intrauterine growth retardation and adverse birth outcomes. However, effects of geohelminths among pregnant women may differ by area and helminth burden. (2, 3, 4)

The soil transmitted helminthes infection is common in area where the practice of geophony takes place. Geophony is the practice of eating earth or soil like substance such as clay or chalk. It is recognized by intentional ingestion of clay soil. Geophony can be risk factor for soil transmitted helminthes because eating of contaminated soil is among major mode of transmission for helminth parasite. The parasite eggs such as round worms stay normally dormant for years in the soil can present a problem. The dilecyion of children and pregnant women to engage in geophony makes them more susceptible to worm infection. (Peter callahan2003 dimmond1998

For survival and development most soil transmitted parasites climatic requirement influence their distributions. The principal factors in maintaining endemicity of soil transmitted helminthes are favorable qualities of the soil and frequent fecal contamination of the soil.

Rain fall is the basic factor for the transmission both in the amount of precipitation and in the pattern of its seasonal distribution. Rains not only provides essential moisture, but also favorable redistribute the eggs both horizontally and vertically in which the horizontal, transport spread the egg over wide area (5, 6).

Clinical presentation and pathogenesis

Most infections are asymptomatic, especially when few worms are present. Pulmonary symptoms occur in small percentage of patients when round worm's larvae pass through the lungs. Round worm can also cause intestinal discomfort obstruction, and impaired nutritional status. *Hookworm* infection can lead to anemia and iron deficiency due to blood lose. Whipworm infection can cause blood loss, as well as dysentery and rectal prolapse. However, travelers are at risk for these more manifestations because they are generally associated with high worm burdens seen in endogenous population. The majority of people infected with *Strongyloides* are without symptoms. Those who develop symptoms to have non-specific or generalized complaint. Some people develop abdominal pain bloating heart burn intermittent episodes of diarrhea and constipation, dry cough and rashes. Rarely people will develop arthritis kidney problems and heart condition (7).

Epidemiology

Widespread, but the prevalence is highest in tropical, developing countries. Travelers to these countries should be at low risk of infection if prevention measures are taken (8).

Life cycle of soil transmitted helminthes

Helminthes form three main life-cycle stages: eggs, larvae and adults. Adult worms infect definitive host (those in which sexual development occurs) whereas larval stages may be free living or parasitize definitive host. Nematodes produce eggs that embryonate in utero or outside the host. The emergent larva undergo four metamorphoses (moults) before it mature in to adult male or female. Humans become infected when ingesting infected eggs (*Ascaris lumricoides* or *Trichuris trichuria*) and larvae of hookworm in contaminated food (vegetables that aren't carefully cooked

washed or peeled), hands or utensils or through penetration of skin by infective *hookworm* and *Stercoralis* larvae in contaminated soil. There is no direct person to person transmission from fresh feaces because eggs passed in feaces need about three weeks in the soil before they become infective (9).

1.2 STATEMENT OF THE PROBLEM

Soil transmitted intestinal parasites infecting about $1/4^{th}$ of the world population. It is almost ubiquities over large area of the tropics and subtropics and persistently of high prevalence (10).

In association with other dietary deficiencies it contributes and significant morbidity and mortality mainly in developing countries (10).

The world health organization estimate that as many as 3.5 billion people are infected by worms and that at any time some 450 million people, are infected most of them are children .The number of those affected are increasing, and cases occur in all world organization regions. It was estimated that in 1995 hookworm infection killed 65,000 people and round worms killed 60,000(10).

All species of soil transmitted helminthes that are Ascaris, trichuris and hookworm *are* present in Ethiopia, even though, the former is more common than the latter's (11).

The prevalence of hookworm infection increase with age in children typically reaching a plateau in late adolescence, whereas the intensity of infectious may continue to increase throughout adult hood (12).

Despite improvement in much of the world, soil transmitted helminthes infection it causes are still are major public health problem in several areas of the tropics and subtropics and continue to affect many millions of people (10).

Helminthes such as hookworm attach themselves to the intestinal mucosa by sucking plugs of host tissue in to their bucal capsule. Mucosal cells are pulled free and digested, capillaries are ruptured and blood lost into the intestinal tract .the worm changes site of attachment every 4-6 hours, causing further damage and hemorrhage (13, 14).

Infection with helminthes impairs the physical and mental growth, nutrition and development of children in general and girls and young women in particular (14).

Many environmental factors affect the amount of soil transmitted helminthes infection in community, high and evenly distributed rainfall humus soil and vegetation favor high infection rate. Soil transmitted do not live in heavy clay soil, whereas humus or soil become important habitation Vegetation is also important as it affords protection to the eggs (17).

Three species that affect man. *Ascaris, trichuria and hookworm* are commonly found in Ethiopian. Although transmit ion has been noted in different parts of the country, it is wide spread in the humid western and south western parts of Ethiopia – keffa , welega and Illubabor (18).

Elucidation of the etiology of *hookworm* infection together with its epidemiology of make programs focused on the effective control (19).

In areas where there is a high risk of hookworm infection, WHO recommends that specific anti hookworm chemotherapy should be included in strategic designed to improve the development and nutritional status of girls and women (19).

In general, this study attempts to evaluate the prevalence of soil transmitted helminthes infection in the study population which is found in Wolkite town and comparing results with others studies which are done in different regions of the world as well as in our countries.

Soil transmitted helminth infections are among a major public health problem in the world, especially in sub-Sahara Africa. Infection with soil transmitted intestinal parasite may be associated with standing of linear growth, physical weakness and anemia. Soil transmitted parasites have been widespread in Ethiopia and are the second most predominant cause of morbidity and mortality in the country associating with anemia and other complication (19).

1.3 SIGNIFICANCE OF THE STUDY

As clearly shown in the statement of the problem and literature review soil transmitted infection are still important health problems in many areas of the developing world. It will give clues for health planners and decision makers so that the intervention action to be taken. The finding of the study will be used as a base line data to those who are interested for similar studies to be conducted in the future in the area.

CHAPTER TWO: LITERATURE REVIEW

Soil born intestinal helminthes infections are among the most prevalent disease in developing countries. Soil transmitted helminthes infection has been one of the major diseases of mankind in worm moist climates. Soil transmitted helminthes infection are reported worldwide where direct contact with contaminated soil can lead to human disease, but occur primarily in warm subtropical regions (19, 20).

Climates sets the general limits to distribution of soil transmitted helminthes infection, but local prevalence and intensity largely determine by human activities. Heavy infection may occur in arid zones, on arable land or fruit and vegetable farms, if irrigation provides enough soil moisture (20).

There are three species of soil transmitted helminthes, *Ascaris lumbricoide, hookworm* and *T.trichura.* The larval stage of the parasite enters the body through the skin and reaches the end of adolescence and young adult hood. The adult helminthes lives in the duodenum and jejunum attached to the intestinal mucosa from which they such blood (20).

The wider distribution of disease in the less developed countries is associated with low socio economic standard, poor environmental sanitation and hygiene practices (i.e. UN sanitary disposal of faces and lack of foot wear). Other factors such as temperature, moisture, soil texture suitable or larva's development and human occupational activities especially in water based developments, considerably affect the spread and distribution of soil transmitted helments infection (20, 21)

The severity of soil transmitted helminthes disease in the community is measured more by the adequacy of the diet than it is by average number of hookworms present all the exposure to infection in severe cases of infection the hemoglobin maybe reduced by 30% or less. Children may suffer several years of mental retardation and physical development (20).

In severe chronic infection in addition to emaciation, mental and physical retardation related to anemia from blood loss, the intestinal sites maybe secondary infected by bacteria when the worm

migrate to intestinal mucosa. Mal absorption of digested food due to lacerated and the accompanying literates (20, 21).

Iron deficiency anemia is the commonest case of anemia in every country of the world. Hemoglobin contains about 2/3 of body iron classically. Individuals who carry a heavy helminthes burden are markedly anemic and have low serum iron. Loss of protein in blood in already malnourished people adds to the (22, 23).

Although there is no exact data in global incidence of helminthes anemia, A marked decrease has been observed in some developing countries where sanitation and health service has been improved while in many others, both and intensity of soil transmitted infection and even mortality rate have remind almost unchanged (24). It is known estimated that some 2150 million persons are iron deficient and that about half of them suffer from iron deficiency anemia. Many of this people lie a rural communities of developing countries where soil transmitted helminthes infections are endemic (24).

In developing countries related disease are common in rural area of the tropics and sub tropics where there is little or no sanitation. The prevalence of helminthes infection in a country may vary considerably from 10-20% in the drier zones to 80-90% where humidity and rainfall are high. Both patterns maybe associated with sever degrees of iron deficiency anemia (24).

A study conducted in Peru women showed a direct relationship between the intensity of helminthes and blood loss. To assess this in Peru recruitment occurred between April and November 2003, showed overall 47.3% of 1,042 women *had* anemia (i.e. hgb <11g/dl) 47.22% where infected with hookworm and 82.25% with *Trichuris trichuria*. Hookworm infection and those with moderate and heavy infection of both hookworm and trichuris infection were more likely to suffer from anemia than women having no or light intensity. These results support routine anti helminthes treatment with in prenatal program in highly endemic areas (24).

A cohort study conducted in southern Thailand showed that a total of 1,063 pregnant women were examined for detection of soil transmitted helminthic infection. The study indicates that among 1, 6063 pregnant women 190 (17.9%) were positive for soil transmitted helminthic

infection. Out of this *Ascaris lumricoides* was detected in 10.3%, hook worm was detected in 5.7% and *Trichuris trichuria* was detected in 6.3% participants (25).

The prevalence of soil transmitted helminthes was assessed among pregnant women in Nigeria. According to this study 816 stool samples were examined for the detection of soil transmitted helminth infection among 816, 394 (48.6%) are infected with soil transmitted helminth and other intestinal parasites. 102(12.5%) presenting mixed infections consisting of mainly *Ascaris lumbricoides, hookworm* and *T.trichuria*. As this study indicated *A. lumricoides* was more prevalent (19.1%) followed by *hookworm* (14.3%). *T trichuria* (7%) and other intestinal parasites (28).

A seasonal study was conducted in Kenya to determine the prevalence of soil transmitted helminthiasis during 2014 on pregnant women attending antenatal clinic suggested that from 153 tested participants 21(13.7%) were infected with different types of soil transmitted helminthic parasites. *Ascaris lumbricoides* was the most prevalent 10 (47.6%) followed by hook worm infection 6 (28.6%) *T.trichuria* 2 (9.5%) *E.vermicularis* 1 (4.8%) (28).

A cross sectional survey conducted to assess the prevalence rate of intestinal parasite with emphasis of soil transmitted infection in school children of boloso sorie Wereda, southern Ethiopia, showed that infection due to hookworm species was 26.8% next to *A.Lumbricoide* 40% low level of hemoglobin was not significantly associated with hookworm infection(29).

Across sectional study conducted on pregnant women living in three districts around Gilgel Gibe dam area, southern Ethiopia showed that a total 388 stool samples from pregnant womenwere examined and 158(47.8%) were positive for soil-transmitted helminthiasis. Among them 114(29.4%) were infected by hookworm followed by *Ascaris lumbricoides* which is 58 (15%) `and *Trichuris trichuria* 13 (3.4%).The study also indicated that is a great association between habit of eating soil and habit of using human feaces as fertilizer(30).

A study conducted in January 2000 among preschool children of Assendabo elementary school Jimma zone, showed that from a total of 1270 students. The prevalence of hookworm was found to be 30(23.1%) which is second to *A. lumbricodes* which infects 65(50%) of sample population

T.trichuria was 3rd infecting 23(17.7%) of the subject, 29(22.3%) were found to have multiple infection with two or three of the above parasites and in 32(24.6%) no parasites was found (30).

A study conducted at south east of lake Langano, Arsi zone indicate that the prevalence of various intestinal helminthes and protozoan parasite were common in school children. It is 88.2% in Kime school children and 75.3% in Langano SIM school children (30).

The public health significance of soil transmitted helminthes disease is briefly reviewed. The latest evidence confirms that blood loss caused by the worms feeding activities in the gut is contributing factors of the development of poor body iron status leading to iron deficiency anemia (30).

As it is indicated by different studies with different prevalence of intestinal parasites. Limited data is available on the prevalence of intestinal parasites and its association with anemia. Hence we aimed to determine the magnitude of intestinal parasitic infection and its association with anemia.

CHAPTER THREE: OBJECTIVE

3.1 GENERAL OBJECTIVE

To determine the prevalence of soil transmitted helminthes infection among patients visiting wolkite health center.

3.2 SPECIFIC OBJECTIVE

To determine the prevalence of soil transmitted infection among patients visiting Wolkite health center classifying by age, sex and residence.

To determine the distribution of soil transmitted helminthes among patients visiting Wolkite health center classifying by age, sex and residence.

CHAPTER FOUR: METHODOLOGY

4.1 STUDY DESIGN

A cross sectional study on prevalence of soil transmitted helminths infection was conducted among patients visiting Wolkite health center.

4.2 STUDY AREA AND PERIOD

The study was conducted at Wolkite health center which is found in Gurage zone, Wolkite Town, the capital of Gurage Zone which is located in South east of the SNNPR. The Town is found 149.6km from Addis Ababa. The Zone has an area of 50,023sq km and accounting for 7% of the SNNPR. It has also a population of 3 million and attitude of 1910m according to central statics of Ethiopia in 2007. Wolkite health center is one of the health centers found in Wolkite city giving a better service and has a better set up relatively. The health center provides different health services to many people.

4.3 POPULATION

4.3.1 Source population:

All patients visiting Wolkite health center during the study period.

4.3.2 Study population:

All individuals who visited Wolkite health center laboratory for stool examination during the study period.

4.4 SAMPLE SIZE AND SAMPLING TECHNIQUE

A sample size was determined using the following formula and the final sample size was allocated proportionally.

$n = (z\alpha/2)^2 \times p\ (1-p) / d^2$

$$n = \frac{(1.96)^2\ 0.8(1-0.8)}{(0.05)^2}$$

n = 245 Where,

n = required sample size

p = prevalence

d = the margin of area or

tolerance

$Z\alpha/2$ = the standard normal variables as 95% confidence interval

All study participants who came to the laboratory during the study were included consecutively.

4.5 STUDY VARIABLES

4.5.1 Dependent variables

- Soil transmitted infection

4.5.2 Independent variable

- Age
- sex
- Residence

4.6 METHOD OF DATA COLLECTION

Two to three days before the beginning of data collection, it was informed to the hospital representative about the study by the principal investigator. Basic information like age, sex and

residency was collected using standard questionnaire which was prepared based on the objective of the study.

4.7 SPECIMEN COLLECTION

Stool specimen was collected according to the standard operational procedure. Each selected individual were provided with labeled stool cap and clean wooden applicator and requested them to bring stool and it was labeled on delivery.

4.8 DATA ANALYSIS AND INTERPRETATION

Necessary information gathered from the questionnaires and the result of laboratory examination was compiled and analyzed using software of SPSS version16 on the bases of general and specific objectives. The result was presented using tables.

4.9 ETHICAL CONSIDERATION

A formal letter from student research program was sent to Wolkite health center. The purpose of study was explained to the study subjects and conducted in the study after verbal consent was reached. To respect confidentiality, code number rather than names was used during sample processing.

CHAPTER FIVE: RESULTS

In this study a total of 245 study participants were involved. Out of these 112(45.7%) were male and 133(54.3%) were female. The overall prevalence of intestinal parasite was 6.53%. Three species of intestinal parasite were identified. Among these species the highly prevalent one was *hook worm* (5.3%) followed by *Trichuris trichuria* (0.81%) and Ascaris *lumbricoide* (0.40%). In this study (6.53%) of participants who were positive for soil transmitted helminthes.

Table 1 .Socio-demographic characteristics of soil transmitted helminthes among patients visiting

Wolkite health center from Feb 10 to 25, 2021. (n=245)

Sex of the respondent

CHARACTERSTICS	FREQUENCY	PERCENT
MALE	112	45.7
FEMALE	133	54.3
TOTAL	245	100.0

Residence of the respondent

CHARACTERSTICS	FREQUENCY	PERCENT
URBAN	186	75.9
RURAL	59	24.1
TOTAL	245	100.0

Age of the respondent

CHARACTERSTICS	FREQUENCY	PERCENT
0-10	65	26.5
11-20	49	20.0
21-30	51	20.8
31-40	40	16.3
41-50	20	8.2
51-60	15	6.1
>60	5	2.0
TOTAL	245	100.0

Table 1 above shows that the greater hand of the study population were female (54.3%) and the remaining 45.7% were males. With residence prospective 75.9% were urban dwellers and 24.1 were rural. In accordance with age those from 0-10 were dominant (26.5%) followed by those between 21-30(20.8%) and the least were those >60 years of age (2.0%).

Table 2. The laboratory result soil transmitted helminthes among patients visiting Wolkite health center from Feb 10 to 25, 2021. (n=245)

Total laboratory result

POSITIVE	NEGATIVE	TOTAL
16	**229**	**245**

Laboratory result of the respondent with species

CHARACTERSTICS	Frequency	Percent
H.warm	13	5.3
T.trichuria	2	0.8
A.lumbercoid	1	0.4
No o/p seen	229	93.5
Total	245	100.0

Table 3. Prevalence of soil transmitted helminthes among patients vising Wolkite health center with socio demographic characteristics, from Feb 10-25/2021

Laboratory result of the respondent with sex

SEX	POSITIVE	NEGATIVE	TOTAL
MALE	8	104	112
FEMALE	8	125	133

Laboratory result of the respondent with residence

RESIDENCE	POSITIVE	NEGATIVE	TOTAL
URBAN	6	180	186
RURAL	10	49	59

Laboratory result of the respondent with age

AGE	POSITIVE	NEGATIVE	TOTAL
0-10	1	64	65
11-20	6	43	49
21-30	3	48	51
31-40	2	38	40
41-50	2	18	20
51-60	2	13	15
>60	0	5	5

Table 3 above shows that of 112 male subjects 8 were positive and of 133 females 8 were positive for intestinal helminthes and 6 of 186 urban dwellers and 10 0f 59 rural subjects were positive for the soil transmitted intestinal helminthes. Each age group is found infected with the parasites; 010(1/64), 11-20(6/43), 21-30(3/48), 31-40(2/38), 41-50(2/18), 51-60(2/13),>60(0/5), respectively.

CHAPTER SIX: DISCUSSION

Soil born intestinal helminthes infections are among the most prevalent disease in developing countries. Soil transmitted helminthes infection has been one of the major diseases of mankind in worm moist climates. Soil transmitted helminthes infection are reported worldwide where direct contact with contaminated soil can lead to human disease, but occur primarily in warm sub-tropical regions (19, 20). There are discrepancies among different studies conducted in different areas.

The objective of this study was to determine the prevalence of soil transmitted helminthes.

The overall prevalence of soil transmitted helminthes (10.2 %) when compared to study done in Peru this prevalence is lower which was 47.7% but in both cases there was association between intestinal parasite infection (24).

Study conducted in Thailand (25) shows overall prevalence of soil transmitted helminthes 17.9% slightly higher than this study. In both study Ascaris lumbricoide is the most prevalent helminthes. The prevalence of soil transmitted helminthes among pregnant women in Nigeria was 48.6% this result is higher than this study. The difference may be due to climatic difference between the two countries.

Another study conducted in Kenya (28) shows nearly similar prevalence of soil transmitted with this study which was 13.7%.

Across sectional study conducted in southern Ethiopia (19) indicated the prevalence of Ascaris lumbricoide 40% followed by hookworm 26.8% and no association between soil transmitted helminthes. Even though the helminthes identified in this study was nearly similar there was also strong association between soil transmitted helminthes infection level of the participants ($p< 0.05$).

Another cross sectional study conducted around Gilgel gibe dam (25) area shows the prevalence of 47.8%. It was very higher than this study. This difference might be due to the wet soil of Jimma area that is very suitable for life cycle of the helminthes.

Regarding with age categories there was association between age and intestinal parasite infection.

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 of the countries.

CHAPTER SEVEN CONCLUSION AND RECOMMENDATION

7.1 CONCLUSION

Soil transmitted helminthes infections are prevailed at all sex, age and residence.

7.2 RECOMMENDATIONS

Some of the main recommendations are as follows:

- Health education on the transmission, consequence of the infection and means of control is mandatory to reduce the transmission and prevalence of soil transmitted helminthes.

REFERANCES

1 Embil J,Pereira L, White F, Gamera J, Manuel F. Prevalence of Ascaris lumbricoides infection in a small Nova Scotian community. AM J Trop Med Hyg 1984;33:595-8

2 Bundy DA Chan MS, Savioli L. Hookworm infection in pregnancy. Trans R Soc Trop Med Hyg 1995;89:521-2.s

3 .de silva NR, Brooker S, Hotez PJ, Montresor A,Engles D, Savioli. Soil-transmitted helminth infections: Updating the globalpicture. Trends Parasitol 2003; 19:547-51

4 Gbakima AA,Sherpard M,Whitr PT. Intestinal helmith infection in rural school children in Njala Sierra leone. East Afr Med J 1994;71:792-6

5 World Health Organization. Prevention and control of schistosomiasis and soil-transmitted helminthiasis. Report of a WHO expert committee, WHO Tech Rep; Ser No 912.1 Geneva, Switzerland: World Health Organization; 2002

6 rompton DW. How much helminthiasis is there in the world, J Parasitol 1999;85:397-403

7 Getachew, Million, et al. "Anaemia and associated risk factors among pregnant women in Gilgel Gibe dam area, Southwest Ethiopia." *Parasites & vectors*,5.1 (2012): 296

8 Cline B.L, Savillie L, Meira M. Intestinal helminthes control and program to eliminate lymphatic filariasis parasitology.2000, vol.121,p 3-39.

9 Kloos H,tesfayohanis T.M. Intestinal parasitism inkloss and Ahmed edition . The ecology of health and disease in Ethiopia, santrancise, 1993, 230-231.

10 Powlowaski Z.S,Schad G.A,sttoff G.A stott G.A,sttot,G.J. Hookworm infection and anemia approach to prevention and control.WHO,Geneva.1991

11 The world health report, fightimg disease fostering development WHO Geneva.1996: P, 43.;

12 Santiso R effects of chronic parasitosis on women's health, Int.j.Gynaecol-Obstetrics .1995, 58: 129-36.

13 Wintrobe M.M clinical hematology 8th ed,1981

14 Beaver P.C clinical parasitology 9th ed ,1984

15 Cherbourg M., district laboratory practice in tropical in tropical countries, part 1 cambrige university plass UK p 212

16 Olsen A., mangnssuen p., ouma j.H Andreessen J. and fris H. The contribution of hookworm and other parasite infrction to Hgb and from status among children and adult in western kenya.

Transaction of the royal society of tropical Med and hygiene (1998), Vol.2

17 Befikir Elfachew ,(prevalence of hook worm infection,the prevalence of anemia and the association between the two variables among students at Assendabo elementary school Jimma Zone(student graduation thesis unpublished) 2000.

18 Patrick R.,Murray Geozge, S.Michael , A.Pfaller ken S.Rolenthal ,(1994) medical microbiology second edition ,pp 487.

19 Hegazim applied human parasitology, 1994 pp 172Rob.

20 Robert F.boyd , (1995)basic medical microbiology 5th edition,Washington pp 501-19.

21 Hoffbrand A.V ,pattit ,J.E,Essential hematology 3rd ed,1993 22 http:WWW.ajtmhorg /cg/content /full/73/783/2003.

23 . Liabsuetrakul T, Chaikongkeit p, Korviwattanagam S, Petrueng C,Chaiya S, Hanvattanakul C,et al. Epidemoilogy and effect of treatment of soil-transmitted helminthiasis in pregnant women in Southern Thailand. Southeast Asian J Trop Med Health 2009;40:211-22

24. Ozumba UC, Ozumba NA, Anya S.Helminthiasis in pregnancy in Enugu. Nigeria. J Health Sci, 2005; 51:291-3

25. A. I. Luoba, P. W. Geissler, B. Estambale et al., "Earth-eating and reinfection with intestinal helminths among pregnant and lactating women in western Kenya," Tropical Medicine & International Health, vol. 10, no. 3, pp. 220–227, 2005.

26. Sebeka T.semeneh L. tedla S, The clinical picture of hookworm and anemia in northern Ethiopia Ethiopian medical journal,1986, pp24(1): 206

29 Embil J,Pereira L, White F, Gamera J, Manuel F. Prevalence of Ascaris lumbricoides infection in a small Nova Scotian community. AM J Trop Med Hyg 1984;33:595-8

30 L.Mengistu and E.Birhanu. Prevalence of intestinal parasite among school children in rural area close to the south west of lake Langano,*Ethiopi.J.Health Dev.2004:18(2).*

31 Cline B.L, Savillie L, Meira M. Intestinal helminthes control and program to eliminate lymphatic filariasis parasitology.2000, vol.121,p 3-39.

32 Powlowaski Z.S,Schad G.A,sttoff G.A stott G.A,sttot,G.J. Hookworm infection and anemia approach to prevention and control.WHO,Geneva.1991.

33 Kloos H,tesfayohanis T.M. Intestinal parasitism inkloss and Ahmed edition . The ecology of health and disease in Ethiopia, santrancise, 1993, 230-231.

34 The world health report, fightimg disease fostering development WHO Geneva.1996: P, 43.

ANNEXES

ANNEX-1

MATERIALS AND REAGENTS

- Microscope
- Sealant (Wax)
- Glove
- Microscope slide
- Cover glass
- Stool cup
- Applicator stick
- Gauze
- Cotton
- Normal saline

ANNEX -2

PRINCIPLES AND PROCEDURES

PROCEDURES

Direct wet mount

1. Leak proof wide mouth specimen container will be given to patient
2. With applicator stick.
3. Brief explanation will be given to patient about type and amount of specimen.
4. Labeling specimen with patient code No.
5. The specimen will be examined microscopically and macroscopically after sample collection.
6. Stool of patient well be mixes with normal saline or iodine (Lugol) on the slide, the size of stool is usually match head size.
7. Cover with cover slide.
8. Examine systematical for entire preparation for larvae, ciliates, helminthes, ova, cysts, trophozoites, oocysts and sometimes for adults worm macroscopically.

1 Use 10x objectives with the condenser iris diagram is closed sufficiently.

2 Always exam several microscopic fields before report says

"No O/P is seen"

ANNEX – 3

WOLKITE UNIVERSITY COLLEGE OF MEDICINE AND HEALTH SCIENCE
DEPARTEMENT OF MEDICAL LABORATORY SCIENCE

Data collection format prepared for the study of soil transmitted helminthes infection among patients visiting Wolkite Health Centre.

Fill in the space provided or thick in the box provided.

1. Identifications

Code No_____ **Age**_____

Sex, Male ☐ Female ☐

2. Residence: Urban ☐ Rural ☐

LABORATORY RESULTS

Parasitology: O/P_____

ANNEX-4

GROUP MEMBERS

- Habtamu Semahegn 184/10
- Mintesnot Mijan 215/10
- Mohammed Hussen 216/10
- Mohammed Taju 217/10
- Munir Ketema 198/09

WOLKITE UNVERISTY

COLLEGE OF MEDICINE AND HEALTH SCIENCE

DEPARTIMENT OF MEDICAL LABORATORY SCIENCE

As a research adviser, we hereby certify that we have read and evaluated this research prepared under our guidance by Mohammed Taju, Habtamu Semahegn, Mintesnot Mijan, Mohammed Hussen, Munir Ketema. Title Prevalence of Soil Transmitted Helminthes Among Patients Visiting Wolkite Health Centre, Southern Central Ethiopia

Name of research advisers	**signature**	**date**
1._____	_____	_____
2. _____	_____	_____

As an examiner of research defense, we certify that we have read and evaluated the research result prepared by Mohammed Taju, Habtamu Semahegn, Mintesnot Mijan, Mohammed Hussen, Munir Ketema. We recommended that the research be accepted as fulfilling the research requirement for the Degree of bachelor in medical laboratory science.

Name of research examiner	**signature**	**date**
1._____	_____	_____
2. _____	_____	_____