

# Access to Water and Latrine Facilities in Relation to Active Trachoma Infection in Northern Ethiopia

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## Introduction

Trachoma is caused by infection with the *Chlamydia trachomatis* bacterium, which is often transmitted by fomites, direct contact, and the eye-seeking fly *Musca sorbens* which lays its eggs on exposed human feces. Trachoma is the leading cause of infectious blindness in the world.

A national blindness and low vision survey, conducted in 2006, has identified Ethiopia as one of the most trachoma affected countries in the world with a prevalence of 40.1% at a national level and 62.6% in the northern Ethiopia, Amhara region. The high burden of trachoma in the northern region calls for a comprehensive data set to estimate the burden of disease and design intervention programs.

## Objective

This study aims to determine the prevalence of active trachoma in Ankober Woreda in the Amhara region and assess associations between active trachoma, distance to water source, and other individual, household, and village characteristics.

## Methods

A cross-sectional community-based study was conducted in the Ankober Woreda, North Showa zone during July 2007. A total of 507 children (ages 1-9 years), from 232 households were included in the study.

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Table 1- Active trachoma in relation to selected socio-demographic, personal, household and village characteristics

Characteristics	Trachoma Follicles (TF)		Trachoma Intense (TI)		Active Trachoma	
	n (%)	*P-value	n (%)	*P-value	n (%)	*P-value
<b>Gender</b>						
Female	129 (57.8)	0.674	86 (64.2)	0.045	163 (59.3)	0.222
Male	94 (42.2)		48 (35.8)		112 (40.7)	
<b>*Presence of fly-eye</b>						
No	98 (43.9)	<0.001	59 (44.5)	<0.001	122 (44.5)	<0.001
Yes	125 (56.1)		74 (55.5)		152 (55.5)	
<b>**Facial cleanliness</b>						
No	176 (78.9)	<0.001	105 (78.4)	<0.001	211 (76.7)	<0.001
Yes	47 (21.1)		29 (21.6)		64 (23.3)	
<b>Mother Literate</b>						
No	213 (95.5)	<0.001	131 (97.8)	<0.001	264 (96.0)	<0.001
Yes	10 (4.5)		3 (2.2)		11 (4.0)	
<b>Father Literate</b>						
No	194 (87.0)	<0.001	122 (91)	<0.001	239 (86.9)	<0.001
Yes	29 (13.0)		12 (9)		36 (13.1)	
<b>Water source</b>						
Piped water	43 (19.3)	<0.001	21 (15.7)	<0.001	51 (18.5)	<0.001
Spring water	62 (27.8)		44 (32.8)		77 (28.0)	
River or lake water	118 (52.9)		69 (51.5)		147 (53.5)	
<b>Access to latrine</b>						
No	200 (89.7)	<0.001	126 (94)	<0.001	250 (90.9)	<0.001
Yes	23 (10.3)		8 (6)		25 (9.1)	

\*P-value from Chi-Square test.

Table 2- Active trachoma in relation to socio-demographic, sanitary and environmental characteristics

Characteristics	Number of Active Trachoma Cases	Number	Active Trachoma **Odds Ratio (95% CI)
<b>Overall</b>	<b>232</b>	<b>507</b>	
<b>Demographic</b>			
<b>Age(years)</b>			
1-3	17	21	2.47 (1.46-4.17)
4-6	38	62	1.94 (1.32-2.86)
7-9	67	170	1.00 (Reference)
<b>Gender</b>			
Female	163	288	1.20 (0.84-1.72)
Male	112	219	1.00 (Reference)
<b>Socioeconomic</b>			
<b>Mother Literate</b>			
No	264	441	5.88 (2.82-12.72)
Yes	11	66	1.00 (Reference)
<b>Father Literate</b>			
No	239	402	1.62 (0.96-2.72)
Yes	36	105	1.00 (Reference)
<b>Sanitary</b>			
<b>*Facial cleanliness</b>			
No	211	260	7.30 (4.61-11.56)
Yes	64	247	1.00 (Reference)
<b>*Presence of fly-eye</b>			
No	122	323	1.00 (Reference)
Yes	152	180	3.92 (2.33-6.60)
<b>Environmental</b>			
<b>Access to latrine</b>			
No	250	382	4.80 (2.60-8.85)
Yes	25	125	1.00 (Reference)
<b>Water source</b>			
Piped water	51	173	1.00 (Reference)
Spring water	77	121	1.84 (0.98-3.45)
River /lake water	147	213	2.38 (1.32-4.29)

\*Fly-eye is defined as contact with the eyelid margin or tissue internal to the lid margin during the time taken to prepare for examination and examine the child. \*A child's clean face was defined as the absence of ocular and nasal secretions on the face. \*\*Separate models for demographic, socioeconomic, sanitary, and environmental risk factors were used for analysis. Each variable is adjusted for age and other covariates in the model.

## Results

- Overall, the prevalence of active trachoma was found to be 53.9% (95% CI 49.6%-58.2%).
- Age was statistically significantly associated with active trachoma (P<.001).
- Presence of fly-eye (fly contact with the eyelid margin during eye examination) (Odds Ratio (OR)= 3.92 95% CI 2.33-6.60), absence of facial cleanliness (OR=7.30; 95% CI 4.61-11.56), an illiterate mother (OR= 5.88; 95% CI 2.82-12.72), lack of access to piped water OR= 2.38; 95% CI 1.32-4.29), and lack of access to latrine facilities (OR= 4.80; 95% CI 2.60-8.85) were statistically significantly associated with increased risk of active trachoma in children.

## Discussion

Active trachoma among children 1-9 years of age in Ankober is highly prevalent and significantly associated with a number of risk factors including access to water and latrine facilities. Active trachoma was also independently associated with proxy indicators of low socioeconomic status and household location as well as age, facial cleanliness, fly-eye, parental literacy and source of water.

Future interventions in the north showa region should follow in accordance to the SAFE strategy and consider their interdependence with the environmental factors highlighted in this study.

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# Prevalence of Workplace Abuse and Sexual Harassment among Female Faculty and Staff

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## BACKGROUND & OBJECTIVE

Sexual harassment (SH) is a collection of both overt and blatant verbal and physical actions, including intimidation, bribery, and threats of a sexual nature. Workplace abuse (WA) encompasses five categories of abuse including verbal aggression, disrespectful behavior, isolation/exclusion, threats/bribes, and physical aggression. Studies have shown that experiences of SH and WA in the workplace are associated with adverse physical and mental health outcomes. Relatively few studies have assessed the prevalence of SH and WA among faculty and staff neither in academic settings in developing countries. Additionally, few studies connect experiences of SH and WA to mental health.

To address these gaps in knowledge, we conducted a cross-sectional study to assess the 12-month prevalence of SH and WA, and to determine if SH and WA are associated with symptoms of depression among female faculty and staff in Awassa, Ethiopia.

## MATERIALS & METHODS

The study sample consisted of **387 female faculty and staff** from universities in Awassa, Ethiopia.

A **self-administered questionnaire** collected information from the past 12 months about relationships, mood and feelings, experiences with SH, and thoughts and satisfaction concerning the workplace.

**Workplace abuse** was evaluated using a reduced and modified eight-item version of the Generalized Workplace Abuse (GWA) instrument.

**Sexual harassment** in the workplace was measured using a five-item questionnaire used previously by other investigators.

Symptoms of depression were evaluated using the **Patient Health Questionnaire (PHQ-9)**.

**Multivariable least squares linear regression** procedures were employed to assess the effect of WA and SH on symptoms of depression.

**Table 1. Socio-demographic and Lifestyle Characteristics of Female College Faculty and Staff**

Characteristics	Total N=387		Academic Staff N=59		Administrative Staff N=328		P-value <sup>a</sup>
	n	%	n	%	n	%	
Age (yr) <sup>a</sup>	28.54 ± 0.35		26.59 ± 0.73		28.89 ± 0.39		0.007
Age (yr)							
18-30	289	74.7	52	88.1	237	72.3	0.057
31-40	73	18.9	4	6.8	69	21.0	
41-50	23	5.9	3	5.1	20	6.1	
≥51	2	0.5	0	0.0	2	0.6	
College Education Level							
Less than high school	15	3.9	1	1.7	14	4.3	0.001
High school graduate	112	28.9	6	10.2	106	32.3	
College graduate	256	66.1	52	88.1	204	62.2	
Religion							
Orthodox Christian	220	56.8	32	54.2	188	57.3	0.845
Protestant	135	34.9	22	37.3	113	34.5	
Other	28	7.2	5	8.5	23	7.0	
Married							
No	231	59.7	41	69.5	190	57.9	0.148
Yes	153	39.5	18	30.5	135	41.2	
Khat User	53	13.7	8	13.6	45	13.7	1.000
Cigarette Smoker	8	2.1	0	0.0	8	2.4	0.614
Alcohol Consumer	93	24.0	13	22.0	80	24.4	0.868
Poor Health Status**	39	10.1	7	11.9	32	9.8	0.636
Social Desirability Score	1.42 ± 0.061		1.17 ± 0.139		1.47 ± 0.068		0.058

<sup>a</sup> .Mean ± SEM <sup>\*</sup> P-value from Pearson Chi-Square test for categorical variables or from Student's t-test with unequal variance for continuous variables. <sup>\*\*</sup> Fair and less than fair self described health assessment.

## RESULTS

The 12 month prevalence of either sexual harassment or workplace abuse was 86.3%

The 12 month prevalence of **only** SH was 4.1%, and 39.5% for **only** WA

42.6% reported experiences of both SH and WA, and 13.7% reported no experiences of SH or WA

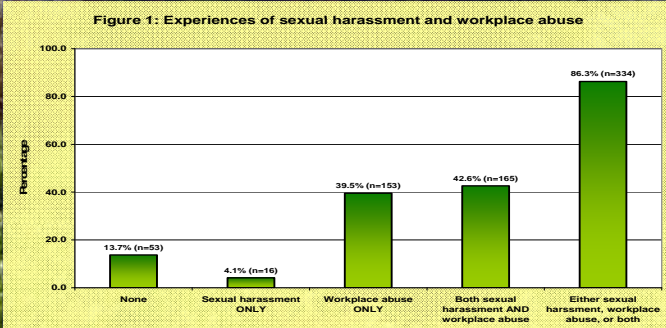
The most common type of SH reported (32%) was "unwanted suggestions about or references to sexual activity"

The most common form of WA reported (54%) was "being screamed or yelled at"

Combined experiences of SH and WA are associated with a 2.49 increased depression score

A total of 36 (9.3%) reported having moderate or moderately severe symptoms of depression

27 (75.0%) of those who reported higher levels of depression had experiences of both WA and SH



## DISCUSSION

The results of this study reveal that SH and WA are highly prevalent among female faculty and staff at universities in Awassa, Ethiopia. Overall, both SH and WA are associated with an increased risk of experiencing symptoms of depression.

Future policies should include a combination of education, health, and public policy initiatives that clearly outline the problem and consequences of sexual harassment and workplace abuse in educational settings.

**Table 2. Average depression according to exposure to SH and WA**

Experiences with sexual harassment and workplace abuse	Depression		Depression Score		P-value
	No (N=351) n(%)	Yes(N=36) n(%)	β ± SE	*Adjusted β ± SE	
None	52(14.8)	1(2.8)	1.65 ± 0.69	1.55 ± 0.74	0.035
Sexual harassment only	15(4.3)	1(2.8)	2.28 ± 0.42	2.30 ± 0.49	< 0.001
Workplace abuse only	146(41.6)	7(19.4)	1.56 ± 0.57	1.54 ± 0.66	0.020
Both	138(39.3)	27(75.0)	2.51 ± 0.41	2.49 ± 0.48	< 0.001

<sup>\*</sup>Depression is expressed as dichotomous variable (Minimal and Mild Depression versus Moderate, Moderately Severe, and Severe Depression) <sup>\*</sup>Adjusted for age, education and Social Desirability Score



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# A Case-Control Study of Preterm Delivery Risk Factors According to Clinical Subtypes and Severity



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## Introduction

Preterm delivery (PTD), delivery before the completion of 37 weeks gestation, is the leading cause of perinatal morbidity and mortality in both developed and developing countries. Putative PTD risk factors include low maternal socioeconomic status, maternal African-American race/ethnicity, nulliparity, grand-multiparity, a prior history of PTD, pre-gestational hypertension or diabetes, psychiatric disorders, antepartum hemorrhage, vaginal infections, psychosocial stress, and lifestyle habits such as smoking, alcohol and illicit drug use during pregnancy. Despite intensive research efforts, the underlying causes of PTD remain elusive.

## Objectives

➢ To assess risk factors of preterm delivery (PTD) in relation of maternal socio-demographic, behavioral, and medical characteristics among Thai women.

## Methods

- Conducted a case-control study of 934 women (467 cases and 467 controls) who delivered singleton live born infants at King Chulalongkorn Memorial Hospital, Rajavithi Hospital, and Police General Hospital in Bangkok, Thailand (July 2006 - November 2007).
- Women participated in a 45-minute in-person interview with trained research personnel using a structured questionnaire (participants were asked to provide information regarding socio-demographic, lifestyle, medical and reproductive characteristics).
- Participants' labor and delivery medical records and prenatal medical records were reviewed by trained obstetric research nurses who used a standardized abstraction form (information abstracted included participants' pre-pregnancy weight, height, blood pressure, pregnancy complications and condition of the newborn).
- We studied in aggregate and in subgroups (i.e., spontaneous preterm labor and delivery [SPTD], preterm premature rupture of membrane [PPROM], medically indicated preterm delivery [MIPTD], moderate preterm delivery [gestational age 32-36 weeks], and very preterm delivery <32 weeks).
- Multivariable logistic regression procedures were used to estimate odds ratio (OR) and 95% confidence intervals (CI) of potential PTD risk factors.

## Results

- Overall, young (<20 years) and advanced (≥35 years) maternal age, nulliparity, a prior history of PTD, low and high pre-pregnancy body mass indexes were associated with an increased risk of PTD.
  - Prior history of PTD and no prenatal care were associated with an increased risk across all the clinical subtypes of PTD.
  - Risk factors, such as maternal age, maternal smoking during pregnancy, nulliparity, family history of hypertension, and maternal pre-pregnancy BMI were noted to have heterogeneity with respect to PTD clinical subtype.
- In logistic regression models, young maternal age was a risk factor of SPTD (OR=2.07, 95% CI: 1.19-3.61) and not a risk factor of PPRM (OR=0.85, 95% CI: 0.42-1.73) or MIPTD (OR=0.43, 95% CI: 0.15-1.22).
- Increased maternal age (30-34 years) and advanced maternal age (≥35 years) were statistically significantly associated with MIPTD.
- Maternal smoking during pregnancy was strongly related with very PTD, nulliparity was most strongly related with PPRM, and family history of HTN was more strongly related with MIPTD.
- Low maternal pre-pregnancy BMI (<18.5 kg/m<sup>2</sup>) was associated with an increased risk of SPTD, moderate PTD, and very PTD, but was weakly, and non-statistically significantly associated with PPRM and MIPTD.
- Maternal obese pre-pregnancy body habitus (BMI≥30.0 kg/m<sup>2</sup>) was associated with increased risks of PPRM and MIPTD, however, these associations did not reach statistical significance.

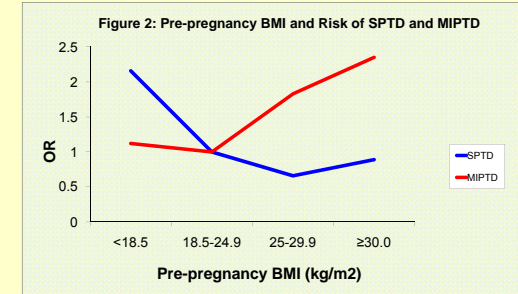
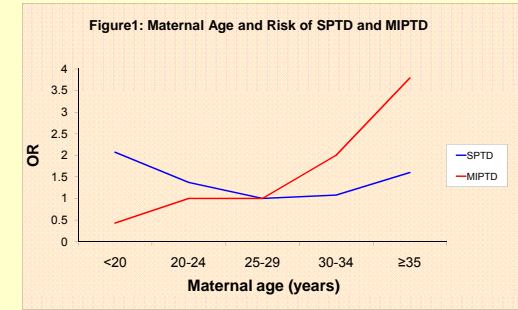


Table 1. Adjusted odds ratios (OR) and 95% confidence intervals (CI) according to selected factors, Bangkok, Thailand, 2006-2007.

Covariates	PTD by Clinical Subtype					
	All PTD (n=467)	SPTD (n=250)	PPROM (n=120)	MIPTD (n=117)	Moderate PTD (n=359)	Very PTD (n=78)
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Maternal age (years)						
<20	1.27 (0.80, 2.01)	2.07 (1.19, 3.61)	0.85 (0.42, 1.73)	0.43 (0.15, 1.22)	1.21 (0.75, 1.96)	2.13 (0.91, 5.01)
20-24	1.10 (0.76, 1.60)	1.37 (0.85, 2.20)	0.70 (0.39, 1.25)	1.00 (0.53, 1.90)	1.08 (0.73, 1.59)	1.20 (0.55, 2.61)
25-29	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)
30-34	1.53 (1.00, 2.34)	1.08 (0.61, 1.92)	1.75 (0.91, 3.34)	2.00 (1.02, 3.90)	1.47 (0.95, 2.28)	2.07 (0.86, 4.98)
≥35	2.27 (1.40, 3.68)	1.60 (0.83, 3.09)	1.67 (0.76, 3.68)	3.79 (1.89, 7.59)	2.11 (1.28, 3.49)	3.64 (1.44, 9.16)
	Trend test p-value 0.025	0.189	0.016	<.001	0.038	0.263
Maternal education (years)						
≤8	-	1.50 (0.65, 3.49)	-	-	-	-
9-12	-	1.33 (0.59, 2.99)	-	-	-	-
≥12	-	1.00 (Reference)	-	-	-	-
Smoke during pregnancy						
No	1.00 (Reference)	1.00 (Reference)	-	-	-	1.00 (Reference)
Yes	1.55 (0.57, 4.21)	1.93 (0.60, 6.19)	-	-	-	3.31 (0.74, 14.75)
Prior history of PTD						
Nulliparous	1.60 (1.15, 2.12)	1.00 (0.65, 1.53)	3.99 (2.27, 7.02)	1.66 (0.97, 2.85)	1.54 (1.10, 2.16)	1.79 (0.91, 3.35)
Parous-no prior PTD	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)
Parous-prior PTD	3.64 (1.87, 7.09)	2.92 (1.32, 6.48)	2.62 (0.80, 8.56)	5.69 (2.44, 13.24)	3.57 (1.80, 7.08)	4.38 (1.49, 12.89)
Family history of hypertension						
No	-	-	-	1.00 (Reference)	-	-
Yes	-	-	-	1.71 (0.94, 3.14)	-	-
Pre-pregnancy BMI (kg/m <sup>2</sup> )						
<18.5	1.70 (1.21, 2.39)	2.16 (1.44, 3.24)	1.37 (0.81, 2.32)	1.12 (0.60, 2.08)	1.60 (1.12, 2.29)	2.45 (1.35, 4.45)
18.5-24.9	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)
25-29.9	1.05 (0.65, 1.71)	0.66 (0.33, 1.33)	0.74 (0.29, 1.88)	1.83 (0.95, 3.52)	1.03 (0.62, 1.71)	1.26 (0.51, 3.15)
≥30.0	1.59 (0.76, 3.35)	0.89 (0.30, 2.63)	2.31 (0.78, 6.86)	2.35 (0.85, 6.50)	1.78 (0.83, 3.78)	0.52 (0.06, 4.51)
	Trend test p-value 0.154	0.154	0.783	0.087	0.352	0.020
Prenatal care onset						
Care initiated in 1 <sup>st</sup> trimester	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)
Care initiated after 1 <sup>st</sup> trimester	1.29 (0.97, 1.72)	1.62 (1.11, 2.37)	0.88 (0.56, 1.39)	1.31 (0.82, 2.11)	1.33 (0.98, 1.80)	1.10 (0.62, 1.94)
No prenatal care	4.34 (1.96, 9.61)	4.92 (2.00, 12.11)	5.53 (1.90, 16.06)	4.87 (1.56, 15.23)	4.46 (1.97, 10.08)	4.92 (1.46, 16.54)
Infant gender						
Female	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)
Male	1.24 (0.94, 1.63)	1.09 (0.77, 1.54)	1.40 (0.91, 2.16)	1.45 (0.92, 2.27)	1.28 (0.96, 1.70)	1.18 (0.70, 1.99)

\*Each column represents a different logistic regression model. Covariates not included in final models are indicated as (-). Each OR and 95% CI is adjusted for all other covariates listed in this table.

## Discussion

- PTD risk factors among Thai women are largely similar to those identified in studies of North American and European women.
- These findings add to a body of literature that suggests evidence of heterogeneity in risk factors for clinical subtypes of PTD.
- Preterm delivery has a complex, multifactorial etiology.
- Further studies in Thailand and elsewhere are needed to more fully characterize the etiology and underlying pathophysiology of PTD. Individual-level behavioral and psychological factors, environmental exposures, medical conditions, biological factors, genetics and epigenetic characteristics should be incorporated into future studies of PTD risk.
- Study limitations include:
  - The results are not generalizable to all Thai women because our study population were women from metropolitan Bangkok.
  - Our case-control study is limited by potential recall bias.
  - Other potential risk factors for PTD, such as maternal genitourinary tract infections during pregnancy, psychiatric diagnoses, and psychosocial stressors, were unavailable for study.



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