Seroprevalence of syphilis amongst pregnant women attending antenatal clinics in a rural hospital in north west Ethiopia

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Abstract
Objective—To determine the seropreva-

lence of syphilis in pregnant women

attending antenatal care clinics in a rural

hospital in Ethiopia and describe their

characteristics so that timely and effec-
tive care can be offered.
Subjects—Pregnant women attending antenatal care clinics at a rural hospital.

Methods—A cross sectional study was

conducted at a rural hospital in north

west Ethiopia in September 1994. Data

were collected on socio demographic

characteristics and past history of sexu-

ally transmitted diseases of antenatal care

attenders from the records of the hospi-
tal. Sera from these pregnant women

were examined for syphilis using the

VDRL test. VDRL positivity was cross

tabulated with socio demographic vari-

ables and past history of sexually trans-
mitted diseases.

Results—Two hundred and seventy

pregnant women were included in the study.

Median age of the respondents was 25-2

years. A substantial majority were ortho-
dox Christians (97-4%) and married (92-6%).

Town dwellers constituted 58-2% of the

antenatal care attenders. Only 4-7% of

the women started attending antenatal care

clinics during the first trimester.

Thirty seven women (13-7%) were found
to be VDRL positive. Past history of sexu-

ally transmitted diseases was significantly

associated with VDRL positivity

(p < 0-05).

Conclusions—High VDRL positivity rate

is observed in this study. Certain risk fac-
tors may be responsible for current and

past episodes of sexually transmitted dis-

cases. There is a need for improvement of

antenatal care activities at different levels

of health care. Appropriate strategies

should be devised for prevention and con-

trol of sexually transmitted diseases in

women of reproductive age groups and

the general population.

(Genitourin Med 1995;71:347-350)

Keywords: Syphilis; seroprevalence; pregnancy; Ethiopia

Introduction
Sexually transmitted diseases (STDs) occur

all over the world and are common both

in developing and in developed countries.

Gonorrhoea, syphilis and now AIDS are the

most widely known but there are more than 20

other STDs. Worldwide on average an esti-

mated number of 685 000 people are infected

with STDs everyday. Every year there are 250

million new cases. These figures, however,

represent a minor part of the problem since a

large number go unreported and are likely
to be either untreated or improperly treated.

Prevalence rates are far higher in developing

countries where treatment is less accessible.

Among women syphilis prevalence rates may

be 10 to 100 times higher in developing coun-

dies; gonorrhoea rates may be 10 to 15 times

higher. A review reported a median of 20% of

women attending family planning, antenatal or

other clinics in Africa had trichomoniases.4

The prevalence of syphilis in pregnant women

in some developing countries ranges from 1% to

20%.4 The STD epidemic in the developing

world is characterised by high rate of compi-
lations, alarming rate of antibiotic resis-
tance and interaction with HIV infection.11

The impact of syphilis on pregnancy out-

come has been well documented in Zambia

where abortion, stillbirth, low birth weight and
genital syphilis were strongly associated with

infection during pregnancy.4 About 40% of

infected pregnancies end up in spontaneous

abortion, stillbirth or perinatal deaths.8

The impact of STD sequelae goes further than

biological damage. Infertility and preg-
nancy wastage are severe stigmata for women

in many societies and may result in divorce

and prostitution.9

Effective and accessible STD services have

made a difference in STD control. In Zambia

the national STD programme reduced the

number of STD cases at a university teaching

hospital from about 18 000 in 1985 to about

5000 in 1991.10 The number of spontaneous

abortions due to syphilis during pregnancy

had also declined.

In Ethiopia STDs ranked sixth among

diseases reported by the Ministry of Health

facilities, constituting 4-7% of all cases of

communicable diseases in 1986-87.11 Syphilis

accounted for 15% of the STDs reported in

the years 1986-87. Neglected for many years,

programmes to diagnose, treat, and prevent

STDs are now becoming an important com-

ponent of AIDS prevention strategy. The aim

of this study was to determine the seropreva-
lence of syphilis in pregnant women who

attend antenatal clinics in a rural hospital in

north west Ethiopia and describe its character-
istics. This may then allow timely and effective
care to be offered.
Table 1  General characteristics of pregnant women attending antenatal care clinics at Debretabor Hospital, north west Ethiopia, 1994

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15–20</td>
<td>65</td>
<td>24.1</td>
</tr>
<tr>
<td>21–30</td>
<td>157</td>
<td>58.1</td>
</tr>
<tr>
<td>31–45</td>
<td>48</td>
<td>17.8</td>
</tr>
<tr>
<td>Religion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orthodox christan</td>
<td>263</td>
<td>97.4</td>
</tr>
<tr>
<td>Moslem</td>
<td>7</td>
<td>2.6</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>250</td>
<td>92.6</td>
</tr>
<tr>
<td>Single</td>
<td>8</td>
<td>3.0</td>
</tr>
<tr>
<td>Divorced</td>
<td>10</td>
<td>3.7</td>
</tr>
<tr>
<td>Widowed</td>
<td>2</td>
<td>0.7</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housewife/unemployed</td>
<td>237</td>
<td>87.8</td>
</tr>
<tr>
<td>Civil servants</td>
<td>30</td>
<td>11.1</td>
</tr>
<tr>
<td>Sex workers</td>
<td>3</td>
<td>1.1</td>
</tr>
<tr>
<td>Number of pregnancies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>69</td>
<td>26.5</td>
</tr>
<tr>
<td>2–4</td>
<td>125</td>
<td>46.3</td>
</tr>
<tr>
<td>5–12</td>
<td>76</td>
<td>28.1</td>
</tr>
<tr>
<td>Number of abortions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>206</td>
<td>76.3</td>
</tr>
<tr>
<td>1</td>
<td>42</td>
<td>15.6</td>
</tr>
<tr>
<td>2–4</td>
<td>22</td>
<td>8.2</td>
</tr>
</tbody>
</table>

Population and methods
A cross sectional study was conducted in Debretabor rural hospital from June to September 1994, among pregnant women attending antenatal care (ANC) clinics. The hospital has 100 beds and is expected to give service for about 1-9 million people of South Gondar administrative zone, 92.2% of whom are rural dwellers. ANC services are given at the outpatient department of the hospital on a daily basis. On the average 18 pregnant women attended the ANC clinic per day.

A sample size of 271 women was calculated using an appropriate formula\textsuperscript{12} with estimated syphilis prevalence of 18% (taken from review of records from an adjacent administrative zone, Gondar hospital), confidence level of 95%, acceptable difference of 5% and contingency 20%. Antenatal cards of all women visiting ANC clinics for the first time during the current pregnancy were reviewed until the required sample size was obtained. Data on socio-demographic characteristics, reproductive history and past history of sexually transmitted diseases were collected. Sera from pregnant women were transported in an ice box to the Gondar College of Medical Sciences hospital laboratory where VDRL test was performed. This serological test detects syphilis reagin by means of a flocculation reaction, using as antigen cardiolipin and lecithin extracted from beef heart, to which cholesterol is added to enhance antigenic effect. We took a semiquantitative result of +1 and above as positive.

The VDRL antigen used in this study was obtained from Bio Mericus Marcy L’Etiole, France. The false positivity and false negativity rates of this test were estimated as 28% and 10% when using the TPHA test as gold standard (Dr. Abraham Assefa. Paper presented at the fifth annual research conference of the Gondar College of Medical Sciences). Data were entered and analysed using EPI INFO version 5 computer program. Frequency distributions were performed on socio-demographic variables and VDRL status of the study population. VDRL status was then cross tabulated with socio-demographic variables. Odds ratios with 95% confidence intervals and/or the chi square test were used to assess the association of variables with VDRL status.

Table 2  VDRL positivity among pregnant women attending ANC clinics at Debretabor Hospital, north west Ethiopia, 1994

<table>
<thead>
<tr>
<th>VDRL status</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative</td>
<td>233</td>
<td>86.3</td>
</tr>
<tr>
<td>Positive</td>
<td>37</td>
<td>13.7</td>
</tr>
<tr>
<td>Total</td>
<td>270</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Results
A total of 270 pregnant women were included in the study. General characteristics of the study population are shown in table 1. The majority of the pregnant women belonged to the age group 21–30 years. Median age of the respondents was 25±2 years. Almost all of the pregnant women in the study (97.4%) were orthodox Christians. A substantial majority of the study population (92.6%) were married and 3% were never married. Two hundred thirty seven women (87.3%) were unemployed or housewives. Only three were registered as commercial sex workers. Dwellers of Debretabor town constituted 58.2% (157) of the antenatal care attenders. The rest came from villages and small rural towns outside Debretabor.

Sixty nine women (26.5%) were pregnant for the first time and 76 (28.1%) had five or more pregnancies. Sixty six women (24.4%) had one or more abortions. The majority of the study population (52.6%) started attending ANC during the third trimester. Only 4.7% started attending ANC during the first trimester.

Among the study population 37 women (13.7%) were found to be VDRL positive (table 2). Residents of Debretabor town appear to have more than twice the chance of being VDRL positive when compared with dwellers of smaller towns and villages, but the

Table 3  VDRL status of pregnant women attending ANC clinics at Debretabor Hospital by socio-demographic characteristics, 1994

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>VDRL status</th>
<th>Chi square</th>
<th>P</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15–20</td>
<td>56</td>
<td>9</td>
<td>4.5</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>21–30</td>
<td>140</td>
<td>17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31–45</td>
<td>37</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>218</td>
<td>32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>15</td>
<td>5</td>
<td>&gt; 0.05</td>
<td>2.3 (0.7, 7.4)</td>
</tr>
<tr>
<td>Number of pregnancies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>61</td>
<td>8</td>
<td>&gt; 0.05</td>
<td>2.8 (1, 5.4)</td>
</tr>
<tr>
<td>2–4</td>
<td>109</td>
<td>14</td>
<td>1.5</td>
<td>&gt; 0.05</td>
</tr>
<tr>
<td>5–12</td>
<td>63</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gestational age at first visit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First trimester</td>
<td>10</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second trimester</td>
<td>88</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Third trimester</td>
<td>115</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Place of residence</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Debretabor town</td>
<td>135</td>
<td>22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>99</td>
<td>66</td>
<td>= 0.05</td>
<td>2.7 (1.01, 8.4)</td>
</tr>
<tr>
<td>Past history of STD</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>216</td>
<td>25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>17</td>
<td>12</td>
<td>&lt; 0.05</td>
<td>6.1 (2.4, 15.6)</td>
</tr>
</tbody>
</table>

OR = Odds ratio; CI = confidence interval.
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Effective and accessible STD service has made a difference in STD control.11 The high prevalence and incidence of STDs in Ethiopia is due to barriers to effective control of STDs which may be attributed to the casual attitude of many Ethiopians toward sexual relations with prostitutes, faith in injectable penicillin as a cure, the common over the counter sale of practically all antibiotics, often the wrong drug or the wrong dose,21 and difficulty of control measures based on tracing and treating sexual contacts. A study showed that a delay in seeking effective medical treatment in STD patients at a health centre was attributed to previous visits to traditional healers (12-2%), local injectors (16-2%), drug shops (19-2%) and private clinics (28-6%).16

The link between HIV infection and STDs that cause genital ulceration is clear. Though not all studies disclosed an association, nine of eleven studies of syphilis and HIV infection found an association.22 Syphilis increased the risk of HIV infection threefold to ninefold for heterosexual men.22

Prevention and appropriate management of STDs are considered to be cost effective intervention for the prevention of HIV transmissions and the complications of STDs. The high seropositivity rate found in this study demonstrates the need for improvement of ANC clinic activities at different levels of health care. Health education and condom promotion activities should be improved and better organised. Attendance of ANC clinics early in the course of pregnancy has to be encouraged. Appropriate strategies should be designed for prevention and control of sexually transmitted diseases in women of reproductive age groups and the general population.

We are grateful to the staff members of Debretabor hospital for their kind cooperation and Mr. Kassie Molla for carrying out the laboratory work.

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9 Laga M. Epidemiology of sexually transmitted diseases in developing countries. Sexually Transmitted Disease 1994; 21(suppl):454-50.


