T i t l e

SEXUALLY TRANSMITTED DISEASES IN GONDAR TOWN

By

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A B B R E V I A T I O N S

1. AIDS - Acquired immunne deficiency syndrome
2. LGV - Lymphogranuloma venereum
3. MOH - Ministry of Health
4. PID - Pelvic inflammatory diseases
5. STD - Sexually transmitted diseases
6. UDA - Urban dwellers association
7. UNICEF - United Nations Children Fund
8. UTI - Urinary tract infection
9. VD - Venereal diseases
10. WHO - World Health Organization

S U M M A R Y

A case-control study of sexually transmitted diseases was carried out in two health units in Gondar Town north-western Ethiopia between September 1987 and November 1987. A total of 285 cases and 570 controls participated in the study. The peak age range was 15-19 years (43.9%) and 20-24 years (34.6%) for female and male cases respectively. In contrast to reports from other parts of Africa, the male-to-female ratio was 1.2:1 in this study. Over 40% of the cases were found in Keftegna four in which there are predominantly soldiers and prostitutes. Of 153 male cases, only 26.2% were married. Married women constituted 33.1% of the cases. While a further 33.3% were divorced women. Soldiers, prostitutes and students (28.8%, 19.7% and 13.3% of the total cases respectively) were identified as high risk groups. The commonest diagonsis was gonorrhoea (56.5%), with further 21.8% of the mixed infections including gonorrhoea. Over 40% of the cases admitted to a previous history of STD. A past history of four or more STD infections occurred in 10.9% of the total cases. Casual contact or unknown contact as a source of infection accounted for 50% of the infections rivalling prostitutes who accounted for 52.3% of the contacts. Of the total cases, 54.4% sought a cure from druggists without seeing a health worker. The practice of self-medication was high and did not appear to differ greatly between educated and illiterate groups ($P>.10$).

Age at first sexual intercourse of less than 20 years was associated with a statistically significant increased risk of STD ($OR_{mh} = 3.6$, $P<.001$). Having no spouse or living away from marital partner and/or family were associated with STD infection ($OR_{mh} = 2.3$, $P<.001$ and $OR_{mh} = 7.3$, $P<.001$) respectively). In females the past history of

premarital sex was found to increase the risk of acquiring STD 4.8 times. Both the practice of multiple partner within on week and one year period were also associated with an increased risk of acquiring STD (OR_{mh} = 13, P<.001 and OR_{mh} = 9.7 P<.001, respectively). This study has implications for the control of sexually transmitted diseases in general and AIDS in particular.

CHAPTER I. INTRODUCTION

Sexually transmitted diseases (STDs), affecting all age groups but with particular magnitude among the productive age groups, are on a rising tide despite the availability of antibiotics and chemotherapeutics. This is vividly reflected by their disturbing levels in many countries.

Until recently, only the five classical venereable venereal diseases (gonorrhoea, syphilis, chancroid, lymphogranuloma venereum, granuloma inguinal) were of great concern to the clinicians as well as the epidemiologists. But today, the number of diseases whose importance as sexually transmitted disease is recognized has expanded greatly [1]. Chlamydia trachomatis, gential herpes, ectoparasitic diseases and acquired immune deficiency syndrome (AIDS) have become increasingly common in nearly all countries of the world. Not only has the total number of these STDs increased but also variety of agents responsible has expanded to include, such as, hepatitis virus B, cytomegalovirus, group B streptococcus and some enteric pathogens.

The recent wide spread and rapid dissemination of the fatal disease AIDS spread mainly by sexual activity is one of the worst epidemics or pandemics the human race has encountered. It constitutes one of the foremost challenges of the medical field today.

Inorder to control STDS such as gonorrhoea and syphilis, national and local control programs have been set up in many countries. Unfortunately, due to numerous factors, such as altered virulence of the aetiologic organisms, altered antibiotic and chemotherapeutic sensitivity, changes in the environment, changes of sexual behaviour [2] and

the emergence of new organisms responsible for STD, the success of such programs has not reached expected levels and decrease clinical cases has failed to materalize.

Even though data on STDs is scarce in developing countries, there are indications that the situation may be even worse than in industrialized countries [3]. On top of the high incidence rates of the traditional venereal disease which are far beyond control, the occurrence of AIDS in the African context makes the situation and control of STDs complex and urgent.

Control programs introduced in the developing countries have been particularly unsuccessful. This can be attributed to lack of adequate health service coverage, poor contact tracing, shortage and high cost of potent drugs, poor diagnostic facilities and application of strategies without appropriate alteration from more affluent countries. In addition, failure to do routine vaginal swabs and routine vaginal exams during pregenancy and failure to train all clinical health workers to do vaginal swabs are factors which have limited the amount of asymptomatic carriers brought forward for treatment.

Thus the loss of life and human suffering from the long-term consequences of STDs produce a more pronounced burden in the developing world with inaccessible and poorly organized and equipped health services.

In Ethiopia, some thirty five years ago, a Ministry of Health, WHO and UNICEF collaborative venture of control program for STD was initiated in the capital Addis Ababa with the ultimate objective of country-wide coverage. In

addition, most health centers in the country had a weekly program of venereal disease control activity. High risk groups such as bar girls were offered free service and contact tracing was attempted.

As years went by, effective treatment and contact tracing decreased particularly in health centers. The former VD clinic in Addis Ababa closed when it was reorganized to render comprehensive service [4].

While the actual incidence of the STDs and information about at-risk groups among the general populace is not known, available evidence such as morbidity returns of health units suggest that STDs are highly prevalent. A 1986/87 morbidity statistics of urban towns which included Gondar revealed that for the age groups 15-44 years the leading cause of morbidity was STD constituting 28,048 (18.6%) of the 150,391 new diagnoses made [4[. Among antenatal attendants in Addis Ababa (1976) 10.9% were sero-positive for syphilis and in the same year a survey done in rural population revealed o.8% sero-positivity rate [5[.

Following the morbidity survey conducted by the MOH which compiled monthly reports of 1986/87 from the health units in urban areas, projections were made of expected cases for the upcoming years based on a 2.9% rate population increase. Thus, the estimated incidence rate for Gondar town was 54.3 per thousand in the age group 15 to 44 years [4]. This figure underestimates the actual incidence of STDs for as many patients seek medical care outside of the health units which are not reported to the MOH. However, it still is of paramount significance when

compared to other developed world. As a result of this the MOH has designed strategies to be implemented for the year 1987/88 in order to control the ever increasing trend of sexually transmitted diseases in Gondar town as well as in other parts of the country.

The present study of STDs in Gondar town was prompted by the lack of data on the exact magnitude of the problem, who are most affected, features of its presentation in Gondar and factors related to high risk groups in the general population. The report and attention given by the MOH was also a triggering impulse. In addition, the principal investigator has strongly identified STDs to be among the major locally endemic diseases in the district during his preparation of 'Health Profile' [6[.

In general the epidemiology of STDs is complex and numerous epidomiologic appraisals especially understanding of the social factors contributing to the spread of these diseases is extremely important and timely. Several studies indicating a larger proportions of patients with STDs to be among lower social strata, members of migratory or itinerant professions and other groups characterized by social mobility [7] have been obtained from the developed countries. It was hoped in this study to discover whether it was possible to localize and describe similar features in an urban African context.

The overall aims of this study were:

1. To determine the relative frequency of STDs among clinic attenders in Gondar town.

2. To determine the distribution of patients by socio-demographic features.

3. To determine whether certain social factors influence the occurrence of STDs in Gondar town.

The specific objectives of the study included:

1. To determine the proportion of the distribution of gonorrhoea, genital ulcers, LGV, trichomonas vaginalis and candidosis among clinic attenders aged 15 to 49 years in Gondar town.

2. To determine the distribution of cases by age, sex, marital status, education and occupation.

3. To determine whether marital status, premarital sex, early start of sex, living with family and multiple partners have an influence on the occurrence of STDs.

This study is expected to provide base-line data on STDs in an urban Ethiopian setting which will enable health planners such as the District Health Team prepare and organize a realistic and replicable STD control program in Gondar town in particular. It is also expected that information so obtained could be useful in organizing STD control program in other towns of the country with similar environmental, economic and social features.

The Study Area:

Gondar town, the capital of Gondar Administrative Region, is found in northwest Ethiopia. It is an urban center with an estimated population of 96,000 making a sex ratio of 96 to 100.

Gondar town is divided into four Kefftegnas (town sub-districts) which inturn are subdivided into 20 Kebeles

(smallest unit of the town sub-district). Overall the town is administered by UDAs. In the town there are numerous bars and hotels where-by the most of the employees are females.

The population of the town is ethnically and religiously very homegeneous with over 95% being member of the Ethiopian orthodox church and less than 5% being muslim and others.

Although the marriage age in the rural area is as low as 10 years such early marriages are exceedingly rare in the town. Marriage is accepted by the community if it is done through the church or licensed by the highest organization of UDAs or if it is done through the agreement of the relatives of both partners.

There are two health units owned by the MOH, one hospital run by the university and nine private pharmacies.

CHAPTER II. LITERATURE REVIEW

Sexually transmitted diseases are a group of contageous conditions whose primary mode of transmission is by sexual intercourse [8].

Even though accurate population-based data on the incidence of STD is generally lacking, clinical health workers in this area agree that the magnitude of the problem is great in nearly all countries. The prevalence of gonococcal infection has been noted to be as high as 20% in the general population, and as high as 50% among female prostitutes in the developing countries [9]. Gonorrhoea incidence estimates have ranged from 3% to 10% per year in Asia, Africa and Latin America [9]. In addition, the incidence of gonococcal ophthalmia neonatorium as one of the leading causes of blindness ranges between 5 to 10 per thousand live birth in the developing countries as comapred to 0.1 to 0.6 per thousand live births in the developed countries [3].

Little information on syphilis is forthcoming from developing countries, although WHO data show that syphilis is becoming more frequent in parts of Africa and in countries of the Far East, and is endemic in some urban areas [2]. Assuming the reporting errors in each country to be consistent, reports of positive serological tests among antenatal clinic attendants ranges between 0.03% in developed countries to 22% in developing countries [5]. Thus the developing countries, in many cases, show very high prevalence rates of syphilis. Control programmes are poor or non-extent, health education is impeded by illiteracy and inappropriate messages and there are many competing priorities for the very limited human and

economic resources available. [10] Larsson reported that of all pregnant women and their babies admitted to MCH center in Addis Ababa, slightly more than 15% had possitive serological test results for syphilis; 21% of their live-born children had clinical signs of congenital syphilis. Still-births and abortion among the sero-positive women were two times higher than in the general population of preganant women who attended the center [11]. The same author has estimated the incidence of congenital syphilis to be 3.2% for Addis Ababa.

It is well documented that the negative effect of STDs in areas of health and society especially in terms of helath care expenditure, cost productivity, human suffering and even death as a consequence of pelvic inflammatory diseases, ectopic pregancy and infertility to be enormous [9]. In a recent study the total annual cost for PID and its sequelae was estimated to exceed $1.25 billion in the United States [12]. It was also noted that there occurs a progressive increase in the chance of infertility with each episode of PID - ranging between 1:25 to 1:1.65 after one and two episodes of infection respectively [1]. Therefore inspite of the availability of sophisticated diagnostic facilities and control programs in the developed world, it can be said that the problem of STD is far beyond manageable capacity. Moreover, the magnitude of the problem can be expected to be much worse in the developing countries which possess limited resources and technical capacity to detect the STDs at an earlier stage [12].

An increase in the size and proportion of young people, particularly in developing countries with broad-based population pyramids and high fertility levels, plays

a role in creating larger numbers of high risk groups [2]. Population shifts from rural to urban areas, were STD rates are higher are also increasing the high risk groups. Furthermore, the opportunities for promiscuous sexual encounter are increasing more rapidly as a result of the loosened brakes of the 'closed circles'of sexual expression with subsequent rapid spread of disease in the recently acculturated young [14]. All this is multiplying the opportunity of multiple sexual contacts, indiscriminate choice of partners, failure to take precautions and the frequency of casual sex.

Maffreeba et al, writing from Dakar in West Africa balmes recent increases in sexual infections on economic evolution, changing customs and the complex migration/urbanization movement of endogenous people [10].

Although everybody is at risk at some time, it is mandatory for control and maximum use of resources to define the high risk group by reasons of age, sex, occupational, geographical, behavioral and psychological characteristics [15]. Studies done in many areas have shown that the younger age group of both sexes are at higher risk in relation to the elderly. The highest morbidity of most STDs was found to occur under the age of 30, with the peak age range of 20-24 years and 15-19 years of males and females respectively [2, 8, 9, 16, 17]. It is also stated that among those young people who are at high risk of contracting infection, most of them are unmarried and start full sex at an earlier age [7, 10].

Prostitutes have been blamed in past as the main reservoir [10]. Plorde has noted an increasing trend of prostitution

in Ethiopia [18]. In his report he estimated about 10-15% of the population in Addis Ababa to be prostitutes. He attributed this increase to the increase in the rate of migration from country-side to road-side and market villages which in turn increases the number of single women becoming brewers and sellers of 'tefj' and 'tella'. Forty to sixty percent of this group are considered to be prostitutes [18]. The role of the promiscurous male as a 'feed-back' to maintain the incidence of the disease in the female pool is well recognized [10]. A.R. Verghagen and W. Gevmert in their study in Kenya, showed a high proportion of extramarital intercourse among cases. Very few males in the study series attributed the infection to marital contact whereas the majority admitted sexual activity with four or more partners [7]. The same study revealed that a large proportion of married respondents meet their spouses only once a month or even less often, the percent being invariably higher in towns than in rural areas, in men when compared with women, and in gonorrhoea patients when compared with controls. Married women at risk from gonorrhoea were those who were not living with their spouses regularly. Besides prostitutes and promiscuous men, there is an ever increasing number of young girls making themselves available as casual sex partners who may serve as principal disseminator of STDs because of the difficulty of tracing them once infected [10].

In American women an epidemic increase of premarital sexual intercourse was observed in the mid and late 1960's. This increase of sexual activity in the young group occurred with a simultaneous (and perhaps contributory) change in the pattern of contraceptive practices and attributed to an increased sexual experience among young women [13]. In Zaria, Northern Nigeria in 1986,

32.4% of the source of infection were casual sexual contacts among whom college girls form the majority and who had the largest reservoir of asymptomatic gonorrhoea [16].

The trend of increased promiscuity and premarital intercourse noted in the developed countries appears to have reached developing countries including Ethiopia recently and has been particularly devastating because of urban migration, the separation of the young from their families and the rebound of the young released from the over protection of their traditional families. While these phenomena are fairly well studied in the developed countries, little is known in the developing countries about them.

In Ethiopia, the reports of STDs deal almost exclusively with the medical aspects of the problem. Little work has been done in determining or identifying social and societal factors with regard to STDs. Plorde, in his report stated that the increased migration and urbanization combined with the changing role of Ethiopian women have led to a rise in prostitution which in turn has increased the incidence of STDs [18].

CHAPTER III. MATERIALS AND METHODS

A. STUDY DESIGN

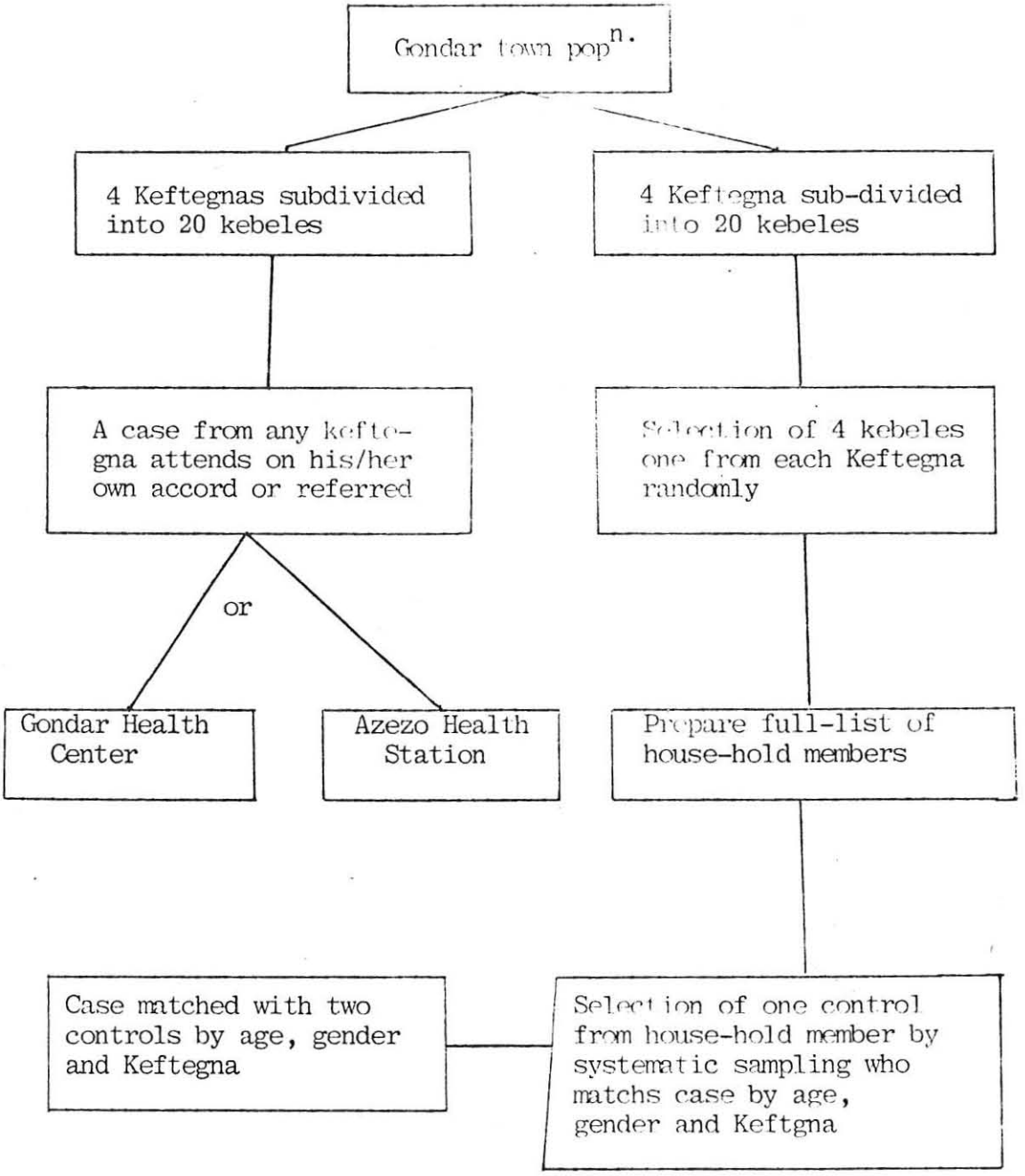
A case-control study of sexually transmitted diseases was designed for the age group of 15 to 49 years of both sexes in Gondar town. Each case was matched with two controls with regard to age (± 3 years), gender and town sub-district (keftegna). See Fig. 1 for study design and selection hierarchy.

Prior to launching the full-scale study, the consent of community leaders from 20 Kebeles (UDA) was obtained during a meeting arranged to explain the rational by the principal investigator. This has helped in allowing access to houses and hence controls for the study. A half-day meeting was also held with nine pharmacy owners when an agreement and sincere enthusiasm was obtained in the referral of suspected cases of STDs who presented first to this sector.

After the preparation of the study protocol, research facilities and confirmation of the support from the concerned groups, a feasibility study was done.

The feasibility study had two components. The first part was a pre-test to determine the knowledge and skills of the interviewers, who were recruited to enroll cases and controls and to diagnose the STDs of particular interest to the study. The questionnaire was filled in by all interviewers. Information obtained was used in designing the contents of the training given to the group for four days to ensure standardization of questions and interviews.

Figure 1. Study design and selection hierarchy



Case: control

1:2

The second part was conduct of pilot study done in Teda town which is located at a 20 km distance from the study area. Through this process some unexpected problems were uncovered. In particular the wording and/or phrasing of some questions was modified. Two new questions and two new category of occupation were added in the final questionnaire. It was also of great help in checking the performance of the interviewers and in minimizing inter and intra-observer variations.

Moreover, after the pilot study, a uniform and standardized questionnaire as well as diagnostic criteria was prepared in Amharic which is the language of the locality.

B. THE PATIENTS

All new cases of STD patients who attended either Gondar health center or Azezo health station between September 1987 and November 1987 were included.

Cases were also obtained from all nine private pharmacies in the town. Cases referred from pharmacy were then referred backto the pharmacy for treatment, whereas, cases in health unit were treated in the same unit once the questionnaire had been answered.

To ensure maximum participation, referred patients were given cards by the pharmacies which get them quickly to the interviewers without delay. Patients who attended the health units on their own accord were similarly handled. On the other hand, this process has maximized the confidentiality. Two doctors were used to interview and diagnose cases.

The eligibility criteria for inclusion of individual cases for study were prepared at the outset. The criteria were:

1. age between 15 and 40 years.

2. residence in Gondar town and possession of an identif-cation card for ascertainment.

3. presenting signs and symptoms of:

   3.1 pain on passing urine
   3.2 urethral or vaginal discharge
   3.3 genital lesion
   3.4 unilateral or bilaterial inguinal lymphadenopathy

Any case with the above signs and symptoms but found to have no STD on examination was excluded.

c. DIAGNOSTIC CRITERIA AND PROCEDURES

The diseases considered in this investigation were gonorrhoea, genital ulcers (syphilis, chancroi) LGV, trichomonas vaginalis and candidosis.

All cases with urethral discharge and vaginal discharge were subjected to microscopic investigation. A portion of their discharge was evaluated by gram-stain for gram negative intracellular diplococci, while another portion was mixed with normal saline and examined promptly under the miscroscope to demonstrate motile trichomonads. In addition, the gram-stain was used to detect candida albicans. The miscroscopic evaluation was done by two laboratory technicians (one senior and one junior) in Gondar health center and Azezo health station. The specimen for microscopic evaluation was collected by the doctors.

Diagnosis of genital ulcers (syphilis and chancroids)was done one clinical grounds. Basis for clinical decision were - genital ulcer which may be smooth, shiny or rough, and uneven with scanty or abundant, purulent secertion. The shape of the ulcer may be irregular, ragged , round or symmetrical. In addition, optional presence of unilateral or bilateral inguinal lymphadenopathy.

Diagnosis of lymphogranuloma venereum was also on clinical ground and the basis for clinical decision was unilateral or bilateral inguinal lymphadenopathy which may be firm, tender, discrete and moveable or indolent, fixed, and matted with or without fistulae.

Summary of diagnostic criteria is presented below:

1. Gonorrhoea - demonstration of gram negative intracellular diplococci from the evaluation of discharge by gram stain.

2. Trichomoniasis - demonstration of motile trichomonads from the evaluation of the discharge on wet-mount preparation.

3. Candidosis - demonstration of candida albicans from the gram stain or wet-mount preparation.

4. Genital ulcers (syphilis or chancroid) - presence of genital lesion with or without inguinal lymphadenopathy.

5. LGV - unilateral or bilateral inguinal lymphadenopathy.

In all cases, a standard history was taken on form by one of the two MDs concerning socio-demographic data (age, sex, marital status, education, occupation age at first

sexual intercourse, premarital sex, number of partners etc.,) pain on passing urine; presence of urethral or vaginal discharge; genital lesion; inguinal lymphadenopathy, followed by meticulous physical examination in particular of the genital area.

All the variables and diagnosis was recorded on the questionnaire. Refer appendix A for the questionnaire.

D. THE CONTROLS

Multi-stage random sampling technique was used to select controls (Figure 1). In the first stage, four Kebeles, one from each Keftegna, were selected by simple random sampling using the lottery system to provide all the controls. A household survey of all Kebeles had been carried out two months prior to launching this study which numbered each household and listed each individual in the household by name, sex and age.

Each case was matched to two controls from the study Kebeles within the same Keftegna. A control of the same sex and within $\pm$ 3 years of age of the case from a household was searched starting with the 10th. (n) household. The second and subsequent controls were obtained from a household at an interval of 10. Suitable controls were selected from Kebele list based on age and sex. Only one control was taken from one household.

A control was excluded from the study if:

1. he/she gave previous history of STD as perceived by himself or herself or confirmed by health worker;

2. he/she had an illness which has led to a bed-ridden condition for seven days or so preceding the date of interview;

3. he/she had complaints of UTI.

Only 47 potential controls were excluded in choosing 570 eligibles for the study. Out of the 47 excluded controls, 45 were excluded because of a past history of STD; while two were bed-ridden for more than one month preceding the date of the interview.

In situations were a suitable control was not obtained from the designated household (n), first the next (n+1) household was approached. Failure to locate a control in this house was followed by approaching the previous household (n-1). It proved possible to locate qualifying controls from within the first three households in all cases.

Although the ease of locating suitable control i.e. without a history of STD within the first three households visited was surprising in view of the high rate of STDs previously recorded in Gondar town, it was felt that those interviewed were frank about past STD infection. However, it was not possible to verify the negative past history of STD nor was it possible to determine the reliability of memory for such events.

When controls were eligible, a standardized questionnaire was filled by the interviewers after obtaining verbal consent. See appendix B for the questionnaire.

E. DATA COLLECTION AND ANALYSIS

All data was obtained by trained health workers whose age range was between 30 years and 37 years. In the

process of data collection, the principal investigator and assistant coordinators were checking each questionnaire at the spot of the work or at the end of the work.

Descriptive data analysis was done to determine freqnency and distribution of STDs among the study population. The characteristics considered were:

1. Proportion of the types of STDs which occurred among the clinic attenders.

2. The age, sex, marital status, education and occupational distribution of the cases.

3. The frequency of past history of STD among the cases.

4. Source of infection.

In addition, a test of significance (X^2-test) was computed for educational status versus self-medication.

The possible exposure factors supposed to have an influence on the occurrence of STDs were dichotomized as present or absent among the cases and their matched controls as follows:

1. Marital status as exposure
   - No spouse - present (+)
   - Have spouse - absent (-)

2. Separation from marital partner or family as exposure
   - Not living with marital partner/family - present(+)
   - Living with marital partner/family - absent (-)

3. Premarital sex as exposure
   -Yes - present (+)
   - No - absent (-)

4. Age at first sexual intercourse as exposure
   - Less than 20 years - present (+)
   - Twenty years and above - absent (-)

5. Number of sexual partners as exposure
   - More than one partner in a week/year period - present (+)
   - One or no partner in a week/year period - absent (-)

Mantel-Haenszel estimate of the odds ratio and chi-square test for matched analysis with two controls per case was determined. A 95 percent confidence interval was determined for all the tests.

The data was compiled manually with computations done using HP-11C programmable hand calculator.

CHAPTER IV RESULTS

The study group consisting of 285 cases and 570 controls from Gondar town were evaluated for some possible determinant factors in the occurrence of sexually transmitted diseases between September 1987 and November 1987.

Over a period of two months 285 (53.7% males and 46.3% females) cases presented for care to Gondar health center and Azezo health station in Gondar town. This represented a male-to-female ratio of 1.2:1. The peak age range for males was 20-24 years (34.6%) and for females 15-19 years (43.9%) See Table I.

About 40% of all cases came from Keftegna four. Among the females 37.9% came from Keftegna two whereas among the males about 54% came from Keftegna four.

The distribution of cases by marital status is shown in Table II. Of the 153 males, 66% were single and 26.2% married. Of the 40 married males, 33 (82.5%) were living with their partner and 7 (17.5%) lived away from their partner. Married women constituted 33.1%; diverced, single and widowed were 33.3%, 29.6% and 6.1% respectively.

Over two-third of all cases have received some formal education. Of the 1980 who attended formal education, 131 (69.7%) were in the class range of 7 to 12 grade. Illiterates comprised 16.1% and those who were able to read and write after attending adult literacy school were 14.4% of the total cases.

As shown in Table III, 53.6% of the male cases were soldiers and 15% students (82 and 23 out of 153 respectively). Among the female cases prostitutes and housewives were 56 (12.4%) and 27 (20.5%) respectively.

Table IV, shows the total diagnosis registered among the 285 cases. Gonorrhoea accounted for 161 (56.5%) of the total diagnosis. This was followed by genital ulcers which accounted for 15.4%. Lymphogranuloma venereum, trichomoniasis and candidosis accounted for 4.9%, 1.1% and 0.3% respectively. The cases who had single infection were 223 (78.3%) and those who had mixed infection 21.8%. In the males gonorrhoea and genital ulcer occuring concomitantly accounted for 50% (8 out 16). In the females gonorrhoea and T.vaninalis accounted for 52.2% (24 out 46) of the mixed infection. (Table V).

The frequency of repeat infection (past history of STDs) among all cases is shown in Table VI. Over 40% of all cases had previous history of STD infection. A past history of more than four STD infections occurred in 10.9% of the cases.

Prostitutes and casual contacts were the source of infection in 52.3% and 39.9% of male cases respectively. On the other hand, casual contacts and husbands were the source of infection in 53% and 31.1% of the female cases respecticely

Of the total cases, 155 (54.4%) had received treatment from a private pharmacy before coming to a health unit. Use of selfmedication was equally distributed in all categories of educational level. There was no statistically significant difference noted with regard to pattern of self-medication and educational status ($x^2(3df) = 3.21$, $P>.10$).

The summarized number of cases and their matched controls according to the age of first sexual intecourse as exposure factor is depicted in Table VII. Of the 285 cases, 180 (63.2%) were positive for the exposure factor. In the controls, 39% (222 out of 570) were postitive for the

exposure. Age at first sexual intercourse of less than 20 years was associated with a statistically significant 3.6 times increased risk of STD (X^2_{mh} = 55.5, $P<0.001$).

Table VIII, shows the relation of marital status among the cases and controls. Having no spouse was associated with a statistically significant 2.3 times increased risk of STD (X^2_{mh} = 18.76, $P<0.001$). The presence of past history of premarital sex in females was significantly associated with the occurrence of STD. Females who had history of premarital sex had 4.8 times increased risk of STD (X^2_{mh} = 45.16, $P<0.001$). Table IX.

The distribution of cases and controls with regard to sharing a regular life with the spouse and/or family is shown in Table X. Of the total cases, 175 (61.4%) were not living with either their spouse or family. Among the controls only 111 (19.5%) were not living either with their spouse or family. Living away from marital partner or if not married from family showed a statistically significant 7.3 times increased risk of STD (X^2_{mh} = 144.86, $P<0.001$).

Analysis of the association of multiple sexual partner and STD is presented in Tables XI and XII. To have multiple sexual partner within one week and/or one year period was associated with a statistically significant 13 times (X^2_{mh} = 124.7, $P<0.001$) and 9.73 times (X^2_{mh} = 206.9, $P<0.001$) increased risk of STD respectively.

Table I. Distribution of cases by age and sex in Gondar Town, 1978

Age (Years	Male No. of pts. (%)	Female No. of pts. (%)
15-19	28 (18.3)	58 (43.9)
20-24	53 (34.6)	26 (19.7)
25-29	37 (24.2)	19 (14.4)
30-34	17 (11.1)	15 (11.4)
35-39	10 (6.5)	11 (8.3)
40-44	6 (3.9)	2 (1.5)
45-49	2 (1.3)	1 (0.8)
Total	153 (100.0)	132 (100.0)

Table II. The Distribution of cases of STD by Marital Status in Gondar Town, 1978

Marital Status	No. (%)
Single	140 (49.1%)
Married	81 (28.4%)
Divorced	54 (19.0%)
Widowed	10 (3.5%)
Total	285 (100.0%

Table III. The Number and Percentage Distribution of Cases of STD by Occupational Status and Sex in Gondar Town 1987

Occupation	No. of Men	No. of Women	Total (%)
Soldiers	82	-	82 (28.8%)
Prostitutes	-	56	56 (19.6%)
Students	23	15	38 (13.3%)
House Wives	-	27	27 (9.5%)
Office Workers	9	9	18 (6.3%)
Self-employed	12	4	16 (5.6%)
Daily labourers	9	5	14 (5.9%)
Others	18	16	34 (11.9%)
Total	153	132	285 (100.0%)

Table IV. Sexually Transmitted Diseases Detected in 285 Patients in Gondar Town, 1987

Diagnosis	No. of Men	No. of Women	Total (%)
Gonorrhoea	97	64	161 (56.5)
Genital ulcers	28	16	44 (15.4)
LGV	12	2	14 (4.9)
T. Vaginalis	-	3	3 (1.1)
Candidoses	-	1	1 (0.3)
Mixed infections	16	46	62 (21.8)
Total	153	132	285 (100.0)

Table V. Distribution of Mixed Infections with Sexually Transmitted Diseases in 225 Patients by Sex in Gondar Town, 1987

Type of Mixed Infection	Males No. of pts. (%)	Females No. of pts (%)
Gonorrhoea + T.Vaginales	-	24 (52.2)
Gonorrhoea + Genatal Ulcer	8 (50.0)	7 (15.2)
Gonorrhoea + Candidosis	3 (18.7)	7 (15.2)
Gonorrhoes + LGV	4 (25.0)	6 (13.0)
Others	1 (6.2)	2 (4.4)
Total	16 (100.0)	46 (100.0)

Table VI. The Frequency of Past History of STDs in Gondar Town, 1987

Frequency	No. of pts. (%)
None	157 (55.1)
Once	29 (10.2)
Twice	46 (16.1)
Thrice	22 (8.7)
$\geq$ 4	31 (10.9)
Total	285 (100.0)

Table VII. Distribution of cases and their matched controls according to the age at first sexual intercourse of less than 20 years and above in Gondar town, 1987

	No. of exposed controls		
	0	1	2
Exposed cases (age at first sexual intercourse under 20 years)	66	60	54
Unexposed cases (age at first sexual intercourse ≥ 20 years	63	30	12

$OR_{mh} = 3.56$

$x^2_{mh} = 55.5$

A 95 percent confidence interval

[2.55, 4.97]

Table VIII. The Distribution of Cases and their Matched Controls According to Marital Status in Gondar Town, 1987

	No. of Exposed Controls		
	0	1	2
Exposed cases (have no spouses)	35	65	100
Unexposed cases (have spouses)	43	24	18

$OR_{mh} = 2.25$

$x^2_{mh} = 18.76$

A 95 percent confidence interval [1.56, 3.25]

Table IX. Distribution of Female Cases and Their Matched Controls by the Practice of Premarital Sex in Gondar Town, 1987

	No. Exposed Controls		
	0	1	2
Exposed cases (had premarital sex)	33	36	50
Unexposed cases (No premarital sex)	1	3	9

$OR_{mh} = 4.85$

$x^2_{mh} = 45.15$

A 95 percent confidence interval [3.06, 7.68]

Table X. Distribution of Cases and their Matched Controls in Relation to living with their Marital Partner and/or Family in Gondar Town, 1987

	No. of Exposed Controls		
	0	1	2
Exposed cases (living away from partner/family)	111	55	2
Unexposed cases (living with partner or family)	81	20	9

OR_{mh} = 7.29

X^2_{mh} = 144.56

A 95 percent confidence interval

[5.27, 10.07]

Table XI. Distribution of Cases and their Matched Controls According to the Number of Sexual Partners Encountered in one week Period in Gondar Town, 1987

	No. of Exposed Controls		
	0	1	2
Exposed cases (more than one sexual partner)	85	12	1
Unexposed cases (≤ 1 partner)	173	14	0

$OR_{mh} = 13$

$x^2_{mh} = 124.7$

A 95 percent confidence interval

[8.3, 20.4]

Table XII. Distribution of Cases and their Matched Controls According to the Number of Sexual Partners in one Year Period in Gondar Town, 1987

	No. of Exposed Controls		
	0	1	2
Exposed cases (more than one sexual partner)	107	69	18
Unexposed cases ($\leq$ 1 partner)	66	19	6

$OR_{mh} = 9.13$

$x^2_{mh} = 206.9$

A 95 percent confidence interval [6.75, 12.34]

CHAPTER V. DISCUSSION

According to the Sexually Transmitted Diseases Control Division in MOH, an estimated 1847 (154/month) people are expected to seek medical care for STDs in Gondar town in the year 1988 (4). This figure is based on 1986/87 returns for STDs from health units and projected on the population who are urban residents. In this study, within a two month period 171 cases were obtained from the two health units. A further 114 cases were obtained from pharmacies.

In view of the high rate of STD cases who do not attend health units for treatment, special efforts were made to include those who seek treatment from pharmacies. This resulted in almost doubling the number of cases, with slightly over 40% of all cases enrolled in the study being referred from the pharmacies. This required working in close cooperation with pharmacists and in particular ensuring that their patients were handled confidentialy, seen quickly and sent back to the pharmacy with the diagnosis, suggestions and possible treatment regimens. The high level of cooperation was maintained by biweekly contact and discussion with the pharmacist and indicates a fertile area for further collaboration in the management of STDs.

Sexually transmitted diseases occur frequently in Gondar town as evidenced by this study. Attack rates for STDs in Gondar cannot be accurately determined from the data obtained in this study because druggists and healers are utilized as extensively by the general populace as government established clinics. On top of this, the under diagnosis of females with gonorrhoea, of which as many as two-third may be asymptomatic is also a problem due to a wide spread lack of routine swabs.

Young people are particularly vulnearable segment of the population as they belong to an age group where sexual activity is at peak. Of the patients included in the study, 77% were under 30 years of age. This was comparable with reports of 58.3% and 86% in Ibadan (22) and Rwanda (23) respectively. In Kenya patients under 30 years of age comprised 81.6% males and 91% females (7). The high preponderance of the young people in this study may be the reflection of broad based population pyramid. On top of this, the presence of young soldiers and young women who moved into the town in search of employment but became prostitutes has contributed for the high proportion of young people.

Both the young soldiers and young women are independent of parental control and find themselves in an environment where there is a cultural upheaval favouring promiscuity and early start of sex. Living away from marital partner or from family was remarkably found to increase the risk of STD.

Almost equal numbers of males and females persented as cases in this study (a male-to-female ratio of 1.2:1). Traditionally male to female ratio may even reach levels of 3:1 to 8:1 (7, 16, 22). This reduction of the ratio in this study is remarkable. This could, in part, reflect the good relationship established between the health unit and the cases - that is in addition to the accessibility of the service, it was free, quick and non-judgemental. Furthermore, the very low ratio may be attributed to an increased freedom of sexual expression in both sexes. Another possible explanation is the preponderence of prostitues among the female cases - this is, the prostitutes do not have fear from attending clinics for social stigmatizing pressures. They seek medical care so that their clients will not refrain from re-visits if infected.

The greatest number of cases were unmarried or separated. Increasingly, having no spouse or being single can be linked to higher probability of acquiring STD infection as a result of possible encounter of multiple partners. If this association is borne out, the greater number of cases with no spouse (78.4% males and 65.9% females) could explain the continuous transmission of the STDs. The same trend was noted in other African clinics (45% unmarried cases in Kenya (7), 47% unmarried cases in Ibadan (22). A high proportion of unmarried people is encountered in this study due to the young age composition of the majority of the cases who have started sex at an earlier age. Certainly, past history of premarital sex was found to be associated with four-fold increased risk of STD. Having no spouse and early start of sex were also associated with 2.3 times and 3.6 times increased risk of STD.

The high risk group identified are soldiers, prostitutes and students. They are represented in the data from Gondar town out-of-proportion to their actual number. These three categories accounted for 28.8%, 19.6% and 13.3% of the total cases respectively. Virtually, all the categories are high risk groups because of the tendecy of multiple and indiscriminate choice of partners (2, 14). Furthermore, the role of prostitutes and casual consorts as a source of infection in the majority of the cases indicate high level of promiscuity especially among these high risk groups. In 52.3% and 39.9% of the males the source of infection were prostitutes and casual non-prostitute consorts respectively. In 53% of the females casual contact was the source of infection. Similar findings have been reported from Ibadan (52.3%) (22) and Rwanda (93.5%) (23). The high level of promiscuity indicated by large number of casual non-prostitute contacts is an emerging behavioral pattern of culture in transmition favouring multiple sexual intercourses. This is important aspect which

should be considered when control program is sought, particularly the issue of contact tracing becomes difficult and complex. In this study, to have a multiple partner was found to increase the risk of STD as found by other studies (10).

Mixed infections accounted for 21.8% of the diagnosis. This proportion is significantly higher as compared to 9.5% in Ibadan [22]. The implication of the high mixed infection rates in the management of cases should not be over looked. It may be a possible mechanism for the emergence of resistant strains or may lead to late complications if under treated. This can be complicated by the high practice of self-medication noted.

Over 50% of the patients had medication for their problem without prescription. Inadequate treatment is the rule rather than the exception in the pharmacies as they sell drugs on request. Therefore, the suboptimal doses of self-medication together with high rates of mixed infection and gonorrhoea are threatening conditions for an increased development of B-lactamase producing strains.

The high proportion of gonorrhoea (56%) may be explained by the fact that unlike the other STDs its manifestation especially in males urges people to seek medical care early. Besides, the estimated proportion for gonorrhoea in Ethiopia is similar (54.8%) [4] to the present finding.

CHAPTER VI. CONCLUSION AND RECOMMENDATIONS

Sexually transmitted diseases are now established as a leading worlwide public health problem. The rapid increase in reported disease in many countries especially that of AIDS, is creating a fearful situation. The rise in HIV seroprevalence rates in the more sexually promiscuous segments especially prostitutes and patients with STDs [21] demonstrate the amplifying effect of STDs on the fulminant spread of AIDS.

The current spread of STDs in the developing countries may continue for some time unless some success is attained in the control program.

In Ethiopia particularly in the urban centers STD is estimated to affect a large group of individuals. In this study the young productive segment of the population was found to be predominantly affected by STD. Promiscuity expressed by high proportion of premarital sex, casual consorts, multiple sexual partners and early start of sex was associated with increased risk of STD.

The other factors found to be significant in the spread of STDs were living away from marital partner and/or family and being unmarried. These factors are also associated directly or indirectly with promiscuity.

Although it was beyond the scope of this study, the situation of STDs in Gondar town is an indicative circumstance for the presence of HIV seropositives i.e. the social factors considered can equally predispose the high risk groups for AIDS.

In general, the high risk group identified by this study are:

1) Soldiers
2) Prostitutes
3) Students

and the characteristics which increased the risk of acquiring STD were:

1) Early start of sex - below 20 years of age.
2) Premarital sex
3) Multiple sexual partners (two or more)
4) Living away from marital partner/family.
5) High proportion of unmarried groups.

Although the aforementioned high risk groups are fairly well distributed in the town, Kefetegna four and two are the residential areas where the majority are found.

Henceforth, to alleviate the prevailing problem of STDs a realistic control program should be envisaged which mainly focuses on the following areas:

1. As the majority of cases seek medical care from pharmacies, the pharmacy owners must be trained on simple technics as to how to diagnose and treat the STDs. In addition, treatment flow-charts should be prepared by the MOH and be provided to this sector.

   The pharmacy should have a link with the health units through reporting cases of STDs including the age, sex, diagnosis and residence area routinely.

2. The high proportion of casual consorts as a source of infection impedes the applicability of effective contact training. Therefore, to minimize the spread of STDs the use of condoms should be encouraged.

3. A regular check-up of soldiers and prostitutes for STDs must be introduced.

4. Education on sex in schools must be extensively carried out.

5. Vaginal examination and swabs must be done routinely during antenatal and family planning session for Gram stain and wet-mount. In addition, screening for syphilis using VDRL-test should be a routine procedure in pregnant women.

6. Health education on STDs must be given in the military camps, schools and women's association meeting sessions.

7. Screening of the high risk group for HIV secropositivity is essential.

8. Last but not least, a more extensive study on the frequency and type of genital ulcers supported by lab facilities must be carried out. Because there is evidence from other African countries that genital ulcers to be linked to heterosexual transmission of HIV and the control of these diseases to be an important point for intervention [21].

APPENDIX A

Questionnaire for cases of STD

Study No. _____
OPD card No. _____
Referral No. _____

1) Name_____

2) Age (in years) _____

3) Sex: Male_____ Female_____

4) Address (Kef/Keb/House No.)_____ _____ _____

5) Health facility_____

6) Diagnosis:

1. Gonorrhoea _____
2. Gental ulcer_____
   (syphilis + chancroid)
3. LGV_____
4. T. vaginalis_____
5. Candidiasis_____

7) The above diagnosis is confirmed by:

1. Microscopy_____
2. Clinically only_____

8) What is your present occupation?

1. Prostitute_____
2. House wife_____
3. Student_____
4. Daily Labourer__
5. (Office and clerical work)__
6. Driver_____
7. unemployed_____
8. Self-employed_____
9. Teacher_____
10. Soldier_____
11. Others, specify___

9) What is your marital status?

1. Single_____
2. Married_____
3. Divorced_____
4. Separated_____
5. Widowed_____

10) At present are you living with your marital partner/ family?

Yes _____ 2. No_____

11) Have you ever attended formal education? If yes, start grade completion_____. If no are you able to read and write? Yes _____ No _____

12) Within the past one week how many sexual partners did you have?

1. None_____ 4. Thrice_____
2. One_____ 5. Four_____
3. Two_____ 6. Above four, state_____

13) Within the past one year how many sexual partners did you have?

1. None_____ 4. Three_____
2. One_____ 5. Four_____
3. Two_____ 6. Above four, state_____

14) Are you able to demonstrate from whom you contacted the disease?

1. Yes_____ 2. No_____

15) If you know from whom you contacted the disease, what is his/her relationship with you?

1. Prostitute_____
2. Spouse_____
3. Regular friend/girl or boy friend_____
4. Casual (no money paid)_____
5. Casual (money paid)_____
6. Casual (No money received)_____
7. Casual (money received) _____

16) Have you taken any medication prior to this visit for the present problem without prescription?

1. Yes_____ 2. No_____

If yes, state the place

1. Drug vendor shop/pharmacy_____
2. Traditional_____
3. Other, specify_____

17) Did you have similar experience like the present problem?

1. Yes_____ 2. No_____

If yes, how many times_____

18) Age at first sexual intercourse (in years)_____

19) To females only_____ did you have a premarital sex?

1. Yes_____ 2. No_____

APPENDIX B

Questionnaire for controls

Study No._____

1) Name_____

2) Age (in years)_____

3) Sex: Male_____ Female_____

4) Address: (Kef/Keb/House No.) _____ ____ ____

5) What is your present occupation?

1. Prostitute_____
2. House Wife_____
3. Student_____
4. Daily labourer_____
5. (Office and clerical work._____
6. Driver_____
7. Unemployed_____
8. Self-employed_____
9. Teacher_____
10. Soldier_____
11. Others, specify_____

6) What is your marital status?

1. Single_____ 4. Separated_____
2. Married_____ 5. Widowed_____
3. Divorced_____

7) At present are you living with your marital partner/ family?

1. Yes_____ 2. No_____

8) Have you ever attended formal education/
If yes, state grade completion_____. If no, are you able to read and wite? Yes _____ Bi_____.

9) Within the past one week how many sexual partners did you have?

1. None_____ 4) Thrre _____
2. One_____ 5) Four_____
3. Two_____ 6) Above four, state_____

10) Within the past one year how many sexual partners did you have?

1. None_____ 4. Three_____
2. One_____ 5. Four_____
3. Two_____ 6. Above four, state_____

11) Age at first sexual intercourse (in years)_____

12) To females only - Did you have premarital sex/

1. Yes_____ 2. No_____

13) Did you have any of the STDs at any time which you know or told by a health worker?

1 Yes_____ 2. No_____

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DECLARATION

I the undersigned, declare that this thesis is my work and that all sources of material used for this thesis have been duly acknowledged.

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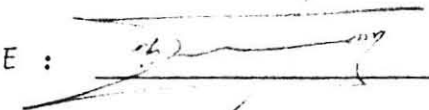
SIGNATURE : 

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