

The need for a comprehensive response to HIV/AIDS in north-western Somalia: evidence from a seroprevalence survey

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الحاجة إلى التصدي الشامل للإيدز وللعدوى بفيروسه في شمال غرب الصومال؛ بيانات مستمدة من مسح بمعدّل الانتشار المصلي الغزالي عبد الله، عيكنيم عيكنيم، دبو سعيد، ب. أروبي، م. غبون، فوج محمد

الخلاصة: لقد أعاق الصراع المدني الطويل الأمد في شمال غرب الصومال (أرض الصومال) تنمية البنية الأساسية الاجتماعية وخدمات الصحة العمومية. ولا تتوفر سوى معلومات قليلة عن الإيدز والعدوى بفيروسه. وفي عام 2004 أجرى الباحثون مسحاً خافراً لمعدّل الانتشار المصلي لفيروس العوز المناعي البشري. فجمع الباحثون عينات الدم من 1561 امرأة ممن يراجعن عيادات رعاية الحوامل، ومن 249 من مرضى السل ومن 243 من المرضى الذين يراجعون عيادات الأمراض المنقولة جنسياً. وأجرى الباحثون على هذه العينات اختبارات لكشف الإفرنجي (الزهري) وفيروس العوز المناعي البشري. واتضح للباحثين أن المعدّل الإجمالي لانتشار فيروس المناعي البشري (1.4%) وهو معدل أعلى بمقدار يعتد به إحصائياً من المعدّل الذي لوحظ في الكثير من البلدان الأخرى في الإقليم. وقد بلغ معدل الانتشار (1.2%) لدى الحوامل اللواتي تتراوح أعمارهن بين 15 و24 عاماً، و12.3% لدى المصابين بالأمراض المنقولة جنسياً و(5.6%) لدى مرضى السل. أما معدّل انتشار الإفرنجي (الزهري) فقد وصل إلى (1.3%) لدى الحوامل.

ABSTRACT The prolonged civil strife in the North-West Zone of Somalia (Somaliland) has hampered the development of social infrastructure and public health services. There are limited data on HIV/AIDS. In 2004, a sentinel HIV seroprevalence survey was conducted. Blood samples were collected from 1561 women attending antenatal care clinics, 249 tuberculosis (TB) patients and 243 people attending sexually transmitted disease (STD) clinics. Samples were tested for syphilis and HIV. Overall HIV prevalence was 1.4%, significantly higher than that observed in many other countries in the Region. Prevalence was 1.2% among pregnant women 15-24 years, 12.3% among patients with STD and 5.6% among TB patients. The prevalence of syphilis was 1.3% in the pregnant women.

Données issues d'une étude de séroprévalence prouvant le besoin d'une riposte complète contre le VIH/sida au nord-ouest de la Somalie

RÉSUMÉ La longue guerre civile qu'a connu le nord ouest de la Somalie (Somaliland) a entravé le développement des infrastructures sociales et des services de santé publique. Il existe peu de données relatives au VIH/sida. En 2004, une étude sentinelle sur la séroprévalence du VIH a été menée. Des échantillons de sang ont été collectés auprès de 1561 femmes lors de consultations prénatales, de 249 patients atteints de tuberculose et de 243 personnes fréquentant des services spécialisés dans les maladies sexuellement transmissibles. Des tests de dépistage de la syphilis et du VIH ont été pratiqués sur ces échantillons. La prévalence globale du VIH était de 1,4 %, sensiblement plus élevée que dans de nombreux autres pays de la Région. Cette prévalence était de 1,2 % chez les femmes enceintes âgées de 15 à 24 ans, de 12,3 % parmi les patients souffrant de maladies sexuellement transmissibles et de 5,6 % chez ceux atteints de tuberculose. La prévalence de la syphilis était de 1,3 % chez les femmes enceintes.

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Introduction

The North-West Zone of Somalia (Somaliland) is a self-declared independent geographic entity. It is bordered by Djibouti, Ethiopia, the Gulf of Aden and Somalia. The estimated population is 3.5 million [1]. Many communities and their socioeconomic fabric have broken down. The protracted conflict has forced many families to flee their homes, with consequent loss of livelihood and social support systems; thus certain population groups have become vulnerable to HIV infection.

The Middle East and North Africa is generally known to be experiencing a low level HIV/AIDS epidemic [2–4]. Although very few countries in this region maintain routine HIV surveillance systems [5], available data from Algeria, the Islamic Republic of Iran, the Libyan Jamahiriya and Morocco now show that the epidemic is localized among high-risk groups such as intravenous drug users, sex workers and men having sex with men. Only Sudan in the Region has a generalized epidemic, with a prevalence of 1.6% among antenatal care (ANC) attendees [2,6].

As HIV continues to impose a large burden globally, surveillance becomes more critical in order to understand the trends and current magnitude of the HIV/AIDS epidemic, and to help in making sound decisions on how best to respond to it.

Seroprevalence surveillance among ANC attendees has formed the main strategy adopted by many African countries to define the HIV/AIDS epidemic, provide evidence for needed response and help evaluate the impact of interventions. Since the early 1990s, many African countries have conducted several rounds of such surveys [7]. The prolonged civil strife has hampered the development of social infrastructure and public health services in Somaliland, and there have been very limited data on HIV/AIDS. The first attempt to

determine HIV prevalence was made in 1999; this showed a prevalence of 0.9% among pregnant women attending ANC clinics in 3 towns [8].

One of the main objectives of the survey was to determine HIV prevalence among pregnant women attending ANC clinics and patients attending tuberculosis (TB) and sexually transmitted disease (STD) clinics. Such information would serve as a tool for advocacy. It would also serve as baseline data against which future intervention efforts could be measured. Women of reproductive age are an important population to monitor since they are important to both heterosexual and mother-to-child transmission of HIV and are used as a proxy for the general population.

Methods

This survey included 3 main sentinel groups; pregnant women attending ANC clinics, tuberculosis patients and patients presenting with syndromes suggestive of sexually transmitted infections. The pregnant women eligible for the survey were those in the reproductive age group, 15–49 years. All ANC attendees presenting for the first time during that pregnancy within the survey period (April–July, 2004) were eligible for inclusion. Samples were not collected from eligible women during subsequent clinic visits. For TB patients, all new microscopically-confirmed cases with pulmonary TB were included while relapse cases were excluded.

Hargeisa in Galbeed region, Borama in Awdal region, Berbera in Sahel region and Burao in Togdeer region were selected for the survey based on population density and accessibility. A total of 7 sentinel sites were involved; 4 ANC sites, 2 STD clinics and 1 TB centre. The facilities were selected based on availability of a reliable laboratory; provision of services to a sufficiently large number

of sentinel groups; routine collection of blood from patients in the sentinel populations as part of routine care and services; availability of adequate storage capacity (good working refrigerator) and the facility to store the specimen for at least 2–3 weeks before dispatching to the central laboratory; geographical and social accessibility; and willingness and capability of staff to participate in the survey.

The sample size was determined according to our estimate of prevalence and a specified confidence level. Although it was conceivable that HIV prevalence would vary from site to site, we decided to use a uniform prevalence in order to minimize confusion of surveillance staff during the zonal training. The expression for sample size determination in cross-sectional descriptive studies, $n = Z^2 pq/\delta^2$ [9], was used to determine the minimum number of subjects required per site. With an estimated HIV prevalence of 2% among ANC clients, 95% confidence level and an error margin of 1.5%, a sample size of 335 was determined but was adjusted to 350 to compensate for possible invalid samples and records. For TB and STD patients, an estimated prevalence of 5% was used with an error margin of 2.7% yielding a required sample size of 250 (95% confidence level). Patients were not directly approached for the purpose of the study. Blood is routinely collected from ANC clients in Somaliland, primarily for syphilis. Every client/patient who met the eligibility criteria was recruited consecutively until the required sample sizes were attained. Operationally, this method was easiest to employ, and offered less opportunity for unintentional manipulation by clinic staff. All ANC clients were informed about available voluntary counselling and treatment services and were referred accordingly.

An unlinked, anonymous testing approach was adopted in the survey. Ten (10) mL blood samples were collected in Vacutainer tubes for HIV and syphilis

testing. Prior to sending the specimen for HIV testing at the zonal laboratory, the container was labelled with a code (survey ID number) that did not identify the client. These samples were transported to the nearest laboratories by assigned town supervisors/laboratory technicians on a daily basis and kept at 2–8 °C. The sera were screened for syphilis using the Rapid Plasma Reagin method (Biotec Laboratories, United Kingdom) and the *Treponema pallidum* haemagglutination assay for confirmation. The blood samples collected from TB patients were tested for haemoglobin using the Sahli method [10] at site and the remaining blood was separated for HIV testing only.

All serum samples were screened for HIV using Cappillus HIV 1/2 (Trinity Biotech, Ireland). All reactive sera were re-tested using Determine kits (Abbot Laboratories) for confirmation at the zonal reference laboratories. All samples were retested at Hargeisa Reference Hospital. Samples with indeterminate results at this stage were finally tested with an enzyme-linked immunosorbent assay (ELISA). The remaining sera were stored frozen at –70 °C for onward transmission to Nairobi for external quality control.

The analysis focused on determining the prevalence of HIV infection by the relevant independent variables such as site, age, sex, etc. Site-, age- and sex-specific prevalence was defined as the percentage of tested samples that were positive for HIV. The HIV prevalence for Somaliland was determined as the median of the site-specific prevalence. Exact confidence intervals (95% CI) were determined using *Epi-Info*, version 3.2.2. Differences in prevalence between regions and sentinel groups were evaluated by the Pearson chi-squared test and P -value ≤ 0.05 was considered statistically significant.

Results

The sociodemographic attributes of the 1561 ANC attendees involved in the survey are shown in Table 1. Most of the women (63.5%) were aged 20–34 years. Teenage mothers constituted 11.0% of the sample. Nearly all the women were married as it is neither socially expected nor acceptable in this culture to be pregnant without having a husband. The level of education of the women was generally low, with 80% having no formal education.

A total of 1561 samples were collected from ANC attendees. The prevalence

Table 1 Characteristics of women (n = 1561) attending antenatal care clinics participating in the HIV seroprevalence survey, Somaliland, 2004

Characteristic	No.	%
Age (years)		
15–19	172	11.0
20–24	347	22.2
25–29	315	20.2
30–34	330	21.1
35–39	200	12.8
40–44	139	8.9
45–49	56	3.6
Not indicated	2	0.1
Marital status		
Single	3	0.2
Married	1552	99.4
Widowed/ divorced/ separated	6	0.4
Residence		
Urban	1463	93.7
Rural	98	6.3
No. of children (n = 499)^a		
None	127	25.4
1–4	233	46.7
5–9	116	23.2
≥ 10	23	4.6
Highest level of education (n = 499)^a		
No formal education	398	79.8
Primary	83	16.6
Secondary	13	2.6
University	5	1.0

^aInformation on number of children and level of education was not recorded for most of the clients.

Table 2 HIV prevalence among women (n = 1561) attending antenatal clinics according to sentinel site, Somaliland, 2004

Site	Prevalence (%)
Burao	0.6
Borama	1.1
Hargeisa	1.6
Berbera	2.3

of HIV in the pregnant women for each sentinel site is as shown in Table 2. Prevalence ranged from 0.6% in Burao to 2.3% in Berbera, with a median of 1.4% (95% CI: 0.9–2.1). The usual place of residence of the ANC clients was classified as urban or rural according to the definition of the Municipal Council. Since the sentinel sites were primarily located in urban centres, the number of clients indicating rural residence was relatively small, only 6.3%. Among these, HIV prevalence was higher than in those who indicated urban residence (3.1% vs 1.3%) but the difference was not statistically significant ($P = 0.122$).

The highest age-specific HIV prevalence was found among women aged 25–29 years (2.4%) followed by those aged 15–19 (1.8%) (Table 3). HIV prevalence among women aged 15–24 years is a United Nations General Assembly Special Session (UNGASS) as well as a national indicator. This indicator was 1.2% (95% CI: 0.4–2.5). In Somaliland, almost all pregnant women seeking antenatal care are married and in this survey, only 9 clients claimed not to be currently married. It was therefore not possible to evaluate HIV prevalence by civil status.

Prevalence of HIV in STD patients ($n = 243$) was 12.3% (95% CI 8.5–17.2). Those aged 25–29 years had the highest age-specific prevalence, 21.6% (Table 4). Among teenage patients, prevalence was 9.4%. HIV prevalence was consistently > 5% in all age groups.

Among the 294 TB patients, HIV prevalence was 5.6% (95% CI: 3.1–9.3)

Table 3 Age-specific prevalence of HIV among women (n = 1561) attending antenatal clinics in Somaliland, 2004

Age (years)	No. samples tested	Prevalence		95% CI
		No.	%	
15-19	169	3	1.8	0.37-5.10
20-24	350	3	0.9	0.18-2.48
25-29	315	8	2.4	1.10-4.94
30-34	330	4	1.2	0.33-3.07
35-39	200	2	1.0	0.12-3.57
40-44	139	1	0.7	0.00-3.94
45-49	56	1	1.8	0.05-9.60

CI = confidence interval

ranging from 3.1% among teenage patients to 6.8% among those aged 35-39 years (Table 5).

Of the 1559 samples from the pregnant women screened for syphilis, 21 (1.3%) were positive (by TPHA). The prevalence rate according to age is shown in Table 6. Chi-squared test for trend showed generally that syphilis prevalence increased significantly with age ($P = 0.004$). Prevalence for those in the oldest age group (40-49 years) was 3.6%.

Discussion

This survey showed that HIV is an emerging public health problem in Somaliland. Compared to the 1999 survey results, there has been an increase in prevalence, though not significant in statistical terms. The median prevalence of 1.4% is considerably higher than adult prevalence in the Middle East and North

Table 4 Age-specific prevalence of HIV among patients attending sexually transmitted disease clinics (n = 243), Somaliland, 2004

Age (years)	Prevalence (%)
15-19	9.4
20-24	13.3
25-29	21.6
30-34	8.3
35-39	11.8
≥ 40	11.5

African (MENA) countries, where estimated prevalence is 0.1% [3-5].

HIV prevalence among women aged 15-24 years is an UNGASS indicator and is generally used as an approximate measure of new infections. When HIV prevalence among pregnant women exceeds 1%, WHO considers this a generalized epidemic, signifying that the epidemic is firmly established in the general population [11].

HIV prevalence was also shown to be very high among STD and TB patients. Clearly this is higher than the average rate of HIV infection in the general population and may be higher in other high risk and vulnerable sub-populations. STD patients are among the bridging groups transmitting the HIV virus to the general population. HIV among TB patients is an indicator of the level and maturity of the epidemic and hence the increasing burden of HIV-related disease in the health care services. HIV among TB patients increases the risk of activation of latent tuberculosis and aggravates the disease [12]. The findings here call for an urgent initiation and implementation of TB/HIV collaborative activities.

Contrary to earlier observations of higher HIV prevalence in urban than rural areas in Sub-Saharan countries [13,14], the gap in many countries is narrowing [15,16] and no area can be considered relatively safe from the scourge. In this survey, HIV prevalence

Table 5 Age-specific prevalence of HIV among tuberculosis patients (n = 249), Somaliland, 2004

Age (years)	Prevalence (%)
15-19	3.1
20-24	6.0
25-29	4.5
30-34	5.4
35-39	6.8
40-44	3.8
≥ 45	5.9

was higher among women with rural residence. It may be argued that women from rural areas who attended urban ANC sites may not be representative of rural dwellers. In order to explore the true urban/rural HIV prevalence in Somaliland, it is necessary to include rural sites in subsequent surveys. What should be emphasized at the moment is the need for interventions to be extended to rural areas in the current response.

Although the level of HIV prevalence in Somaliland is considerably lower than what is observed in other African countries, including its neighbours, this should not be a reason for complacency. The current level of HIV infection is particularly alarming considering that the usual high risk factors explaining the introduction and the spread of HIV,

Table 6 Age-specific prevalence of syphilis among women (n = 1561) attending antenatal clinics in Somaliland, 2004

Age (years)	No. samples tested	Positive	
		No.	%
15-19	169	0	0.0
20-24	350	2	0.6
25-29	315	4	1.3
30-34	330	6	1.8
35-39	200	2	1.0
40-44	139	5	3.6
45-49	56	2	3.6
Total	1559	21	1.3

such as pre-marital and extramarital sex and intravenous drug use, are strongly abhorred in this culturally and religiously conservative society. With high HIV prevalence in neighbouring countries, porous borders and consequent cross-border mobility, the population of Somaliland will become more exposed and vulnerable to HIV transmission. This vulnerability is further compounded by internal conflict, displacement, food insecurity [17,18], and the low level of knowledge on HIV transmission and prevention [19]. It is expedient that aggressive interventions be embarked upon based on clear identification of drivers of the epidemic and communities where HIV vulnerability is highest while there is still a window of opportunity to halt the epidemic. More information is needed on the high risk and bridging

populations in Somaliland, particularly among vulnerable subgroups such as women in high risk environments, clandestine sex workers, internally displaced persons, etc.

An integrated prevention, treatment, care and support strategic plan and a plan to build human capacity to support the national antiretroviral therapy programme have been developed with support from WHO. It must be noted that increasing access to therapy does not necessarily halt the epidemic since therapy only addresses those already affected. Interventions to prevent HIV spread in the first instance must be given priority attention before the epidemic escalates. The Somaliland response needs to generate more information on vulnerable and at-risk groups which may be covertly driving the epidemic.

Conventional methods of surveillance among ANC attendees alone may fail to detect the epidemic if it is concentrated among specific sub-groups. Qualitative and quantitative research methodologies need to be undertaken to further enhance an understanding of the determinants and drivers of the epidemic as well appropriate approaches to interventions in Somaliland. There is a need to establish systematic surveillance on specific groups, and such information should inform targeted interventions.

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