

Knowledge, attitudes and beliefs about HIV/AIDS in Sana'a, Yemen

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المعارف والمواقف والمعتقدات حول الإيدز والعدوى بفيروسه لدى عامة الناس في صنعاء، اليمن
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الخلاصة: على الرغم من أن معدل انتشار العدوى بفيروس الإيدز منخفض في الجمهورية اليمنية، فإن ما فيها من حالات قد تؤدي إلى انتشار سريع لمرض الإيدز وللعدوى بفيروسه. وقد ساعد القائمون على إجراء المقابلات 1033 من السكان الذين تتراوح أعمارهم بين 14 و49 سنة والذين تم اتقاؤهم بشكل عشوائي لاستكمال مسح للمعارف والمواقف والمعتقدات حول الإيدز والعدوى بفيروسه. وقد اتضح أن الوعي العام كان جيداً، رغم الكثير من المفاهيم الخاطئة حول أنماط السراية والوصمة والتمييز ضد الأشخاص. وقد كانت سمات المعارف تتحدد بشكل كبير بالتعليم في المدارس ومكان الإقامة والجنس، فمثلاً لا يعرف 4% من الذكور و12% من الإناث شيئاً عن الإيدز. ورغم أن المشمولين بالدراسة كانوا على دراية بخطور الإيدز الذي يتهدد العالم، فإنهم لم يقدرُوا هذا التهديد حق قدره، وقد كان التلفزيون أكثر مصادر المعلومات شيوعاً، ويتضح أيضاً أن نشر الوعي بين الناس، ولاسيماً بين الشباب، أمر محبّب لتسهيل إعداد برامج تدخلية، لمواجهة الوصمة الاجتماعية وضمان إنشاء الرعاية للمصابين بعدوى الإيدز.

ABSTRACT Although HIV prevalence is low in the Republic of Yemen, existing conditions could lead to the rapid spread of HIV/AIDS. Interviewers helped 1033 residents aged 14–49 years from randomly chosen households to complete a survey of knowledge, attitudes and beliefs about HIV/AIDS. General awareness was good, although there were many misconceptions about transmission modes, stigmas and discrimination against HIV positive persons. Knowledge was significantly determined by schooling, residence and sex. Although they recognized the global threat of AIDS, participants underestimated its threat to the Republic of Yemen. Television was the commonest source of information. Fostering public awareness is recommended to facilitate the development of intervention programmes, fight stigmas and ensure delivery of care to those affected.

Connaissances, attitudes et croyances concernant le VIH/SIDA dans la population générale à Sanaa (Yémen)

RESUME Bien que la prévalence du VIH soit faible en République du Yémen, les conditions existantes pourraient mener à une propagation rapide du VIH/SIDA. Des enquêteurs ont aidé 1033 résidents âgés de 14 à 49 ans, choisis de manière aléatoire dans des ménages, à remplir un questionnaire sur les connaissances, attitudes et croyances concernant le VIH/SIDA. La connaissance générale était bonne, même s'il y avait de nombreuses idées fausses sur les modes de transmission, des préjugés et une discrimination à l'encontre des personnes séropositives. La connaissance était déterminée de manière significative par la scolarisation, le lieu de résidence et le sexe. Même s'ils reconnaissaient la menace mondiale que représente le SIDA, les participants sous-estimaient cette menace pour la République du Yémen. La télévision était la source d'information la plus courante. La sensibilisation du public est recommandée afin de faciliter la mise en place de programmes d'intervention, de combattre les préjugés et d'assurer la prestation de soins aux personnes touchées.

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Introduction

The challenge posed by the global HIV epidemic to both public health and national development continues to grow at an alarming rate. According to estimates by the World Health Organization (WHO) and the Joint United Nations Programme on HIV/AIDS (UNAIDS), 36.1 million people were living with HIV at the end of 2000. Of these, more than 400 000 people were thought to be living with HIV in the Eastern Mediterranean Region [1].

The Republic of Yemen is facing the challenges of illiteracy, poverty, unemployment, a high population growth rate and widening social gaps. The problem of HIV infection could thrive under these conditions [2]. However, the status of the HIV/AIDS epidemic in the Republic of Yemen is not yet clearly defined due to the lack of reliable data and the absence of a surveillance system [3]. Thus far, official data indicate a low rate of HIV infection in the country. By the end of the year 2000, the cumulative number of reported HIV positive cases in the Republic of Yemen was 960 and 209 of those were AIDS patients [4]. Given that AIDS is largely underdiagnosed and that coverage of health services is limited, these cases are only the tip of the iceberg. Nevertheless, many indices raise concerns about a rapidly increasing trend and, in particular, the vulnerability of women and young people, the latter of whom make up more than half of the population. Most alarming is that the number of reported cases of HIV/AIDS has increased fourfold from 1994 to 1995 and fivefold from 1994 to 1996 [5].

Some efforts are being made to raise awareness about HIV/AIDS, such as youth education and media sensitization supported by the United Nations (UN) and international nongovernmental organizations

(NGOs). In order to make these activities more effective, we need to assess where the groups to be targeted for health education currently stand. Such information will serve as a guide for the development of information, education and communication activities for HIV/AIDS prevention and control.

This paper presents the findings of a household survey conducted as a part of a wider HIV/AIDS Situation and Needs Assessment Report [4]. Our objectives were: to assess knowledge about AIDS in terms of causes, modes of transmission, treatment and prognosis; to appraise attitudes towards AIDS and AIDS patients; to determine sources of information on AIDS; and to assess perceptions of risk.

Methods

Our study was a survey of knowledge, attitudes and beliefs of the community of Sana'a.

Structured face-to-face interviews were conducted. The questionnaire used in our survey was adapted from the Arabic version of the questionnaire prepared by the WHO Eastern Mediterranean Regional Office and the WHO Global Programme on AIDS Social and Behavioural Research Unit. The questions were mostly open-ended and covered sociodemographic characteristics, knowledge, attitudes and beliefs.

In general, discussions on sexual matters in the Republic of Yemen are taboo and diseases such HIV/AIDS are stigmatizing. Therefore, during the adaptation process, some questions were cut or reworded to be more socially acceptable in the Yemeni context.

Due to the high illiteracy rate, trained interviewers helped to fill out the household survey. An area in Sana'a outside of our

study sample was chosen for a pilot study and 50 households were randomly selected and interviewed. All survey steps and methodology were tested and as a result any necessary changes to the questionnaire were made. Throughout the study, the principal investigator and the team leaders met daily with the data collectors to ensure the quality of data collected.

According to a new Ministry of Local Administration law, Sana'a is divided into 10 districts and each district is divided into *hai* (*harat*), or 'livelihoods'. From each district, 4–5 *hai* or *harat* were selected randomly. From each *hai*, 20–25 households were chosen randomly so that we would have 100 households from each district and about 1000 households in total (500 males and 500 females). Only residents who were of reproductive age, i.e. aged 14 to 49 years, were included in the survey. We interviewed every eligible person in each selected household. Less than 5% of those eligible refused participation. Male and female researchers interviewed couples separately.

Field data were checked daily. All data collectors carefully checked and coded the data and recorded it on pre-coded forms. After they finished coding, they passed the questionnaires to the team supervisors for rechecking. When there was doubt about procedures, the supervisor checked with the principal investigator. The questionnaires were then given to the principal investigator who also rechecked them.

Data were tabulated using *Epi-Info* software (Centers for Disease Prevention and Control, Atlanta, Georgia, United States of America, 1994). Printouts were made and were checked against the original forms. *Epi-Info* software was also used for statistical analysis. Chi-squared test was used and differences were statistically significant at $P < 0.05$.

Results

A total of 1033 interviews were conducted. The mean age and standard deviation of participants was 31.5 ± 9.0 years. The illiteracy rate was 23% and was significantly higher among females (14% males versus 46% females, relative risk (RR) = 2, confidence interval (CI): 1.8 to 2.2, $P < 0.0001$). Of the females, 90% were housewives. Among the men, the most common occupations were soldiers and office workers (21% each) and vendors and small traders (11%); 13% were unemployed.

Knowledge about AIDS

Overall knowledge was remarkably good. Only 8% had not heard at all about the disease called AIDS (Table 1). Knowledge was significantly determined by sex, as males knew significantly more than females. Whereas only 4% of males did not know about AIDS, 12% of females did not know ($\chi^2 = 23.91$, $P < 0.0001$, odds ratio (OR) = 3.58, CI: 2.08–6.43).

Schooling was another important determinant of knowledge about AIDS. While only 3% of those with schooling did not know about AIDS, 19% of those who had never been to school did not know ($\chi^2 = 70.25$, $P < 0.0001$, OR = 6.84, CI: 4.04–11.64).

The third determinant of knowledge was residence. In suburban areas, 20% of participants did not know about AIDS compared with 6.3% of those who lived in urban areas ($\chi^2 = 4.9$, $P < 0.05$, OR = 3.67, CI: 1.1–14.90).

Only 41% knew that AIDS is caused by a virus compared with 39% who did not know and 20% who gave other answers, e.g. bacteria, parasite, genes or punishment from God.

Table 1 Knowledge about AIDS and possible modes of transmission

Item	Yes %	No %	Do not know %
Heard about AIDS	92	8	0
Causative agent is a virus	41	20	39
Patient may have no symptoms or signs	46	22	32
An infectious disease	93	4	3
A curable disease	17	67	16
Method of transmission			
Extramarital sex ^a	96	1	3
Blood transfusions ^a	97	1	2
Injections ^a	96	1	3
Sharp blades/instruments ^a	94	1	5
Male to male sex ^a	84	2	14
Female to female sex ^a	68	6	26
Mother to child (e.g. pregnancy, breastfeeding or other) ^a	86	7	7
Touching	28	59	13
Drinking/eating	41	44	15
Clothes	44	34	13
Kissing	56	27	17
Mosquitoes/insects	68	18	14

^aCorrect modes of transmission.

Of those who knew about AIDS, 46% stated that an HIV infected person might not show any symptoms. Of these, 72% believed that infection could be transmitted to others even if an infected person did not show symptoms. Only 4% thought that AIDS is a noncommunicable disease.

Only 17% believed that there is a cure for AIDS, but 44% of these did not know what that cure was. Others mentioned behavioural changes (13%), new drugs (7%), drugs that boost or improve immunity (5%), general drugs (4%) and traditional medicine (2%). Only 34% believed that all patients would die eventually from AIDS and that there is no cure.

Table 1 shows knowledge of modes of transmission of HIV/AIDS. Although the majority seemed to be well informed about the major modes of transmission such as sexual intercourse, homosexual contact and blood transfusions, there were still important misconceptions in that some believed that HIV/AIDS could be acquired through touching, eating and drinking or mosquito bites.

As for mother-to-child transmission, 86% believed that AIDS could be transmitted from mother to child. Of these, 48% believed that this could happen during pregnancy, 38% thought via breastfeeding and

14% thought after pregnancy and breast-feeding.

Attitudes towards AIDS

There was a discrepancy between the extent to which AIDS was considered a threat to the world and to the Republic of Yemen. While 69% reported AIDS as one of the most dangerous diseases facing the world, only 28% thought this for the Republic of Yemen (Table 2).

Two-thirds of the sample would be willing to look after relatives who contracted HIV/AIDS compared with 28% who would refuse to do so. There was a common attitude that AIDS patients need to be isolated and should receive special care in special health settings. Overall 65% thought that AIDS patients needed to be cared for at special AIDS hospital compared with only 17% who thought that AIDS patients could receive care through general hospitals. Approximately 1% believed there is no need to

care for AIDS patients and that they should be killed.

About 51% thought only specialized staff should provide care to AIDS patients compared with 16% who thought care could be provided by ordinary health staff. Another 21% thought that family members should provide this care. Others mentioned volunteers or that AIDS patients themselves should care for each other.

Approximately half of the participants thought that the government should pay the expenses for treating AIDS patients. Others thought this was the responsibility of the family (35%) or NGOs (10%).

As for voluntary testing and counseling, 86% of respondents would agree to be tested for HIV/AIDS. Of them, 98% would want to know their results and 87% would accept their family being informed also. However, 81% would prefer to inform their families themselves compared with 17%

Table 2 Attitudes towards AIDS

Item	Yes %	No %	Do not know %
Mentioned AIDS as one of the dangerous and important diseases that is facing the world	69	31	—
Mentioned AIDS as one of the dangerous and important diseases that is facing Yemen	28	72	—
Willing to look after their relatives if they have got AIDS	66	28	6
Thought that AIDS patients need to be isolated and cared for at special AIDS hospital ^a	65	—	—
Willing to be tested for AIDS	86	13	1

^aOriginally 'where should someone with AIDS be provided with medical care'; 'No' and 'Do not know' categories were not applicable.

who would prefer the doctor to inform their families.

Nearly all participants strongly believed that the government should take action to prevent the spread of AIDS. The most commonly chosen actions were awareness raising (33%) and checking airports and foreigners (25%). Other commonly mentioned actions were isolation of patients (19%), prevention of prostitution (11%), ensuring blood safety (7%) and imposing safety measures in health facilities (2%).

Perceptions of risk

Only 36% of respondents were aware that there was a possibility that they could get HIV/AIDS compared with 33% who be-

lieved that there was no possibility whatsoever that they could get infected (Table 3).

The people thought to be at higher risk of HIV infection were those who have extra-marital sex (54%), homosexuals (11%) and users of contaminated syringes or surgical instruments (5%). Less commonly mentioned risk categories were receivers of infected blood (4%), drug addicts (2%) and relatives of AIDS patients (1%). An additional 5% did not know who was more at risk and 16% gave wrong answers such as foreigners, refugees and children.

The respondents believed that the people who were less at risk were those who were religious (56%), who had a single partner (29%) and who were aware of

Table 3 Perceptions of risk and behavioural changes

Item	Yes %	No %	Do not know %
<i>Possibility of getting infected</i>	36	33	9
<i>Which people at high risk of AIDS?^a</i>			
Those who have extramarital sex	54	—	—
Homosexuals	11	—	—
Users of contaminated syringes or surgical instruments	5	—	—
<i>Which people at low risk of AIDS?^a</i>			
Those who stick to religion	56	—	—
Those with a single partner	29	—	—
Those who are aware about transmission methods	7	—	—
<i>Behavioural changes</i>			
AIDS can be avoided by behavioural changes	89	5	6
Changed their behaviour after learning about AIDS	38	57	5
Knew someone who changed behaviour after learning about AIDS	25	54	21
Planning to change behaviour in the future to avoid AIDS	56	38	6

^aRespondents answered query directly; 'No' and 'Do not know' categories were not applicable.

transmission methods (7%). Categories that were mentioned less often were those who have less contact with patients (4%), who had no blood transfusions (3%), who did not use contaminated syringes or surgical instruments (2%) and who avoided homosexuality (2%).

Most respondents (89%) thought that individuals could avoid infection by behavioural changes. Nevertheless, only 38% mentioned that they had changed their behaviours after learning about AIDS and only 25% knew people who had changed behaviours to avoid AIDS. These behaviours included avoiding sharing razor blades and shaving instruments, avoiding contaminated medical instruments like syringes and avoiding extramarital sex. A

slight majority (56%) were planning to change behaviours to avoid AIDS compared with 38% who were not.

Sources of information

The most common source of general information was television (93%) (Table 4). Television was watched equally by both sexes and 69% of those who watched television did so daily. As regards other sources, 76% listened to the radio; 46% of those did so on a daily basis. Females listened to radio less often than males (72% versus 80%, $\chi^2 = 8.91$, $P < 0.01$, OR = 1.57, CI: 1.2–2.1). Of the literate, 80% read newspapers and of these 18% did so daily. Whereas 29% of females did not read

Table 4 Sources of information

Item	Yes %	No %
<i>Sources of general information</i>		
TV	93	7
TV on daily basis	69	–
Radio ^a	76	24
Radio on daily basis	46	–
Newspapers ^{a,b}	80	20
Newspaper on daily basis	18	–
<i>Sources of information about AIDS</i>		
TV	40	–
Newspapers	21	–
Radio	19	–
Friends	9	–
Others, e.g. health workers, families and religious leaders	8	–
<i>Discussed HIV/AIDS</i>		
With friends ^c	39	40
With family members ^d	25	51

^aSignificant differences between males and females.

^bOf the literate only.

^cMany times 39%; rarely 20%; never 40%; didn't know 1%.

^dMany times 25%; rarely 23%; never 51%; didn't know 1%.

newspapers, only 19% of males did not ($\chi^2_1 = 9, P < 0.01, OR = 1.6, CI: 1.3-2$).

Television was the main source of information about AIDS (40%), then newspapers (21%), radio (19%) and friends (9%). Less common sources were families (3%) and religious leaders (2%). It was surprising that health workers were the source of information for only 3%.

Only 25% had discussed HIV/AIDS-related matters many times with family members while 39% had discussed such matters many times with friends.

Discussion

Baseline research and situation analysis is an exercise that should take place prior to educational intervention and should assist in identifying areas for intervention by highlighting gaps or shortcomings. Knowledge, attitudes and beliefs studies are very useful in this aspect as tools to assess the extent to which an individual or a community are in a position to adopt a disease risk-free behaviour. Since the desired outcome of information, education and communication is the sustained practice of a healthy behaviour, it is important prior to developing or introducing activities that pitfalls and shortcomings are properly diagnosed and pinpointed. This assessment should not be limited to looking for obstacles at intra-levels, i.e. within knowledge or within attitudes, but should be also towards inter-levels, i.e. between knowledge and attitudes or between knowledge and practices.

As this is the first knowledge, attitudes and beliefs survey of HIV/AIDS in Sana'a, it will put some light on the community's shortcomings towards this growing health problem. It will also help identify areas for information, education and communication

interventions to address those shortcomings.

Similar published studies from Arabic countries are scarce, thus limiting the proper comparison of our findings.

Knowledge

Although most had good overall knowledge, there were wide and significant gaps between rural and urban dwellers, male and females, and education levels. These gaps need to be tightened. In a similar survey in Kuwait, the knowledge score was positively associated with education [6]. Geographical differences in knowledge were also found in other studies [7,8].

Misconceptions about modes of transmissions such as touching, eating or drinking, clothes, kissing and insect bites were still widely prevalent. Such misconceptions were also reported from different countries. In a survey in Kuwait, gaps were found about modes that did not transmit the disease [6]. In a Bangladeshi knowledge, attitudes, beliefs and practices study of HIV/AIDS among people seeking work overseas, most people who knew of HIV had some false beliefs about modes of HIV transmission, for example, believing that HIV could be contracted by touching an AIDS patient or sharing bathing facilities or eating utensils [8]. Therefore, providing information about HIV/AIDS transmission that stresses the lack of scientific evidence for these misconceptions should be a priority.

Attitudes

The community underestimates the threat of HIV/AIDS to Yemen. Such false perceptions need to be counteracted, because although Yemen is a country with low HIV prevalence conditions exist that could lead to the rapid spread of HIV/AIDS in the fu-

ture. Poverty, social disparities, illiteracy and inadequate and low-quality health care services are among the determinants that could lead to the rapid spread of the virus in the country.

Negative attitudes towards HIV/AIDS infected people are rather prevalent and this can lead to an unsafe atmosphere with grave consequences for patients living with AIDS. Therefore, there is a need to develop positive attitudes in term of provision of care and support of these patients.

Many participants suggested checking airports and foreigners for HIV/AIDS; this indicates a common view that AIDS is invading Yemen mainly through foreigners and refugees. Such misconceptions need to be tackled. That Yemeni residents account for more than half of the reported AIDS cases needs to be clearly conveyed.

Perception of risk

The possibility of acquiring HIV infection is underestimated by the community and needs to be reinforced through the clear understanding that anyone can be at risk. Because behavioural changes are not total protection from HIV/AIDS, the link between behaviour and HIV/AIDS needs to be emphasized and the role of behaviour in protection must be highlighted. In a separate unpublished study among patients living with AIDS, no patients believed that they could be victims of HIV/AIDS (A.W. Al-Serouri, unpublished report, 2001). Thus, the perception of risk and the importance of behavioural changes need to be stressed.

Sources of information

TV is the current and probably the future leading source of knowledge about HIV/AIDS. That TV is the only source of information that is used equally by both males

and females is encouraging, as it can be used to minimize the significant gap in knowledge between the sexes. Health workers might have been low on the list of information sources because of their over-emphasis on curative care and underestimation of the importance of health education [9]. Another reason could be that discussions of sexual matters are taboo and health workers need to be re-educated about spreading the message to the general public on such a sensitive issue.

In several countries such as Uganda, religious leaders are prominent in HIV/AIDS education in communities [10]. Unfortunately, this is not the case in Yemen where only 2% received information through this channel. As Islam emphasizes that sex should only take place within marriage, this message reinforces our health. Such an important source of information should be tapped as 12% of the participants mentioned religious leaders as one of their preferred sources of information in the future.

Recommendations

A high level of public awareness, especially among the young, is critical at this stage to facilitate the development of intervention programmes to protect the community, fight stigmas and ensure a safer environment for those who are affected. The following are our main recommendations.

- Development of public awareness strategies through:
 - Creation of effective health education materials to address misconceptions
 - Use of TV and radio to publicize AIDS issues on a regular basis
 - Fostering of partnerships with religious leaders and NGOs to pass HIV/

- AIDS-related educational messages to the community;
- Development of core training materials that are appropriate in the local context and that take into consideration the above-mentioned shortcomings and gaps;
- Development of other means of publicity to reach the underprivileged, such as role-playing for rural areas and hotlines in urban areas.

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References

1. *AIDS in the Eastern Mediterranean Region, 2000. Progress report, EMRO.* Cairo, Eastern Mediterranean Regional Office, World Health Organization, 2001 (EM/RC47/INF.DOC.2).
2. *Yemen common country assessment.* Sana'a, United Nations Development Programme, 2001.
3. *Epidemiological fact sheet on HIV/AIDS and sexually transmitted infections: 2000 update.* Geneva, Joint United Nations Programme on HIV/AIDS and World Health Organization Working Group on HIV/AIDS and STI Surveillance, 2000.
4. *HIV/AIDS situation and needs assessment report.* Sana'a, United Nations Development Programme, 2001.
5. Tawillah J. *Travel report summary.* Geneva, Joint United Nations Programme on HIV/AIDS, 1997.
6. Al-Owish R et al. Knowledge, attitudes, beliefs and practice about HIV/AIDS in Kuwait. *AIDS education and prevention*, 1999, 11(2):163-73.
7. Bui TD et al. Cross-sectional study of sexual behaviour and knowledge about HIV among urban, rural and minority residents in Viet Nam. *Bulletin of the World Health Organization*, 2001, 79(1): 15-21.
8. Rahman M et al. Knowledge, attitudes, beliefs and practices about HIV/AIDS among the overseas job seekers in Bangladesh. *Public health*, 1999, 113(1): 35-8.
9. *Health sector reform in the Republic of Yemen. Volume 1: Strategy for reform.* Sana'a, Ministry of Public Health and Populations, 1998.
10. *AIDS education through Imams. A spiritually motivated community effort in Uganda.* Geneva, Joint United Nations Programme on HIV/AIDS, 1998 (UNAIDS document 98.33).