

ORIGINAL RESEARCH ARTICLE

Awareness of HIV/AIDS and household environment of pregnant women in Pune, India

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Summary: Our objective was to determine the level of HIV/AIDS knowledge of pregnant women in India. In a sub-sample of these women, we documented the extent to which they experienced adverse social and physical difficulties within their home. The study was performed at an urban antenatal hospital clinic in Maharashtra, India. From April to September 2001, structured interviews were conducted on 707 randomly selected antenatal clinic patients related to HIV/AIDS knowledge. Of these, 283 were further interviewed to document any social or physical difficulties they experienced. Over 75% of women displayed knowledge of primary transmission routes. Nearly 70% of women demonstrated knowledge of maternal to child transmission, however, only 8% knew of any methods of prevention. TV and written material were more strongly related to knowledge than access to radio messages or conversations with individuals. Thirty per cent of the women experienced physical or mental abuse or their spouse's alcohol and/or drug problems. Women reporting such abuse were more than twice as likely to have adequate HIV/AIDS knowledge compared with women reporting no such abuse. We found no relationship between reported household abuse and educational level of woman, husband, occupation of either partner, language or religion. We found no relationship between HIV status and knowledge of HIV and no relationship between HIV status and risk of abuse in the household. However, the total number of HIV patients in our sample was very small.

Keywords: AIDS/HIV awareness, pregnant women, India

Introduction

Since HIV was first detected in India in 1986, the prevalence of HIV infection is estimated to have increased to over 3.9 million¹. The epidemic began in high-risk groups such as female sex workers and their clients. However, married monogamous women have been identified as a population at increasing risk for HIV in India². This is reflected in data from the recent National AIDS Control Organization (NACO) sentinel surveillance which reports the seroprevalence rates of pregnant women rising to 1–2%¹.

These increasing rates are a considerable public health threat. Unless the population has an adequate understanding of AIDS and the ability to practise low risk behaviours, these rates will

continue to rise. Through the efforts of the National AIDS Control Organization (NACO), there are now effective antiretroviral drugs being made available and accessible to pregnant women throughout India. To optimize the effectiveness of any intervention, women must have adequate and correct knowledge of HIV/AIDS transmission, risk behaviours and available treatments.

In this study, we determined what women attending an urban antenatal clinic (ANC) knew about these topics and their access to media related to HIV/AIDS prior to any ANC education or counselling. These data were used as part of an on-going effort to improve the quality of voluntary counselling and testing (VCT) services at this hospital. In addition, this study examined the extent to which these women experienced adverse social and physical difficulties within their home. As social risks, such as physical or mental abuse, have been associated with increased HIV risk^{3–5}, we hypothesized that those women who report greater difficulties have less knowledge of HIV/

AIDS, less access to media and information and are more likely to be HIV positive.

Methods

We conducted interviews with randomly selected women during their first antenatal visit at a large government hospital in Pune. For this study we asked every fifth newly registered patient in the antenatal clinic (ANC) if she was willing to participate in a structured interview regarding HIV/AIDS knowledge. Women were eligible for the study if they were between 18 and 44 years old. Of the 781 women approached, 707 women were eligible and willing to participate in the study. Of these women, every third woman (for a total 283) was asked to provide additional information on social and physical problems experienced in the past. These data were collected from April 2001 to September 2001.

The nature of the study was explained to all women and written informed consent was obtained. All semi-structured interviews were administered by a trained behavioural scientist and were conducted prior to the HIV/AIDS education and counselling sessions. The topics covered in these interviews included demographic and clinical characteristics, access to media related to HIV/AIDS, and general knowledge of HIV with a focus on maternal to infant transmission. The interview on social risks documented reported difficulties at home within the family such as financial, relational, history of abuse, or health problems. All women were subsequently provided the opportunity for voluntary counselling and testing. To protect patient's confidentiality, no names were recorded on the interviews, only serial numbers.

In order to create a composite measure of HIV/AIDS specific knowledge, we developed several additive scores based on women's correct responses⁶. One overall-knowledge score and four specific-knowledge scores were developed for each woman. Each score was further characterized as adequate (1) or not adequate (0) using the mean number of correct responses as the cutoff. The overall-knowledge score was based on women's knowledge within each of the sub-areas of HIV transmission, HIV prevention, available HIV treatments and maternal infant HIV issues. A woman was classified as having adequate knowledge of HIV/AIDS if she displayed adequate knowledge in three out of four specific areas, i.e. (1) transmission; (2) prevention; (3) treatment, and (4) maternal-infant HIV/AIDS.

Data analysis was conducted using SAS version 9⁷. General descriptive statistics such as frequencies were calculated and presented. Logistic regression analysis was used to determine the relationship between area specific knowledge and access to information related to HIV/AIDS through television, radio, written material or conversations. Logistic regression was also used to examine the

relationship between socio-demographic characteristics, reported household difficulties and adequate knowledge of HIV/AIDS.

Results

Demographic data on these women (Table 1) indicate that nearly all were married (99%), mostly 25 years or younger (86%), and housewives (83%). Only 11% of the women came to their antenatal checkup alone. The remaining (89%) were accompanied by a family relative or friend indicating support within the household for health-seeking. However, as is the practice in most of India, a large proportion of women (33%) reported plans to leave the area soon after delivery, either to go to their natal home or husband's home. Only 40% of the women reported that they would be in the area indefinitely.

The women reported high rates of access to educational materials on HIV/AIDS (ranging from

Table 1. Demographic characteristics of pregnant women attending hospital antenatal clinic and reported information sources on HIV/AIDS (*n*=707)

Characteristic	No.	(%)
Age		
18–20 years	270	38
21–25 years	339	48
26 years or more	98	14
Religion		
Hindu	480	68
Muslim or others	227	32
Occupation		
Housewife	584	83
Other	123	17
Marital status		
Married	700	99
Deserted, unmarried	7	1
Accompanied by		
Other relative/friend	209	30
Husband	194	27
Mother, mother-in-law	187	26
Alone	79	11
Place of residence after delivery		
Will stay in area	393	63
Indefinitely	(281)	(40)
Only three months after delivery	(89)	(14)
About one year after delivery	(23)	(4)
Will not stay in area	232	33
Going to natal home	(177)	(25)
Going to husband's home or moving	(55)	(9)
Reported information sources on HIV/AIDS		
Television	537	76
Billboard/poster	359	50
Radio	342	48
Newspaper/pamphlet	265	38
Conversations		
Friend/neighbours	214	30
Teacher/health care worker/doctor/non-governmental organization	169	24
Relatives	162	23

Table 2. Patient's understanding of HIV/AIDS before education and counselling was provided ($n=707$)

Question	No.	(%)
<i>Transmission</i>		
Transmission—unsterile injection	553	78
Transmission—sexual contact	545	77
Transmission—unsterile tattoo	245	35
No transmission—donating blood	361	52
No transmission—staying in the same room	324	46
No transmission—by food	309	44
No transmission—by mosquito bite	266	38
<i>Prevention</i>		
Mentioned at least one method prevention (below)	374	53
Avoid sexual relations with infected person	(289)	(41)
Avoid injection with unsterile needle	(167)	(24)
Avoid infected blood transfusion	(104)	(15)
Use a condom	(46)	(7)
Avoid breastfeeding baby	(10)	(1)
Treatment during pregnancy to protect baby	(6)	(1)
One can look healthy but still have HIV/AIDS	435	62
Can't be passed via respiratory tract (infectious)	282	40
<i>Treatment</i>		
Non-availability of treatment for complete cure	226	32
Non-availability of vaccine for prevention	207	29
<i>Specific mother to infant HIV/AIDS knowledge</i>		
Transmission—breastfeeding	433	61
Transmission—mother-to-child	479	68
Can't get HIV from holding a baby	370	52
Availability of treatment to prevent mother-to-infant transmission	60	8

38% from newspapers or pamphlets to 76% from television). A substantial number of women also reported having had conversations with others about HIV/AIDS, most frequently with friends (30%), but also with health and educational professionals (24%) and immediate relatives (23%).

We found general knowledge of HIV/AIDS to be high in this population (Table 2). Knowledge of primary transmission routes, such as sexual contact and use of unsterile needles was over 75%. Nearly

half of the women displayed knowledge of modes where HIV was not transmitted. Fifty-three per cent of women were able to mention at least one method of prevention and 62% knew that one could not tell if someone had AIDS just by looking at them. About one-third of the women expressed knowledge of HIV treatments, lack of a complete cure or a vaccine. A surprisingly large percentage of women demonstrated knowledge of maternal-to-child transmission routes (61–68%), however a very small percentage (8%) knew of any treatments to prevent mother-to-infant transmission.

When examining the relationship between woman's knowledge and reported access to media, we found that women who reported access to any media (TV, radio, newspapers or conversations) were significantly more knowledgeable than women who did not report media access (Table 3). The magnitude of the associations reveal that TV and written material such as billboards, newspapers were more strongly related to knowledge than access to radio messages and discussions with individuals. This was true for specific knowledge and overall HIV/AIDS knowledge.

Education of the woman was very strongly related to HIV/AIDS knowledge (OR=5.8 (3.3–10.1)) and education level of her husband (OR=2.4 (1.3–4.5)). In addition, if the husband was reported to have a higher status employment, the women were 50% more likely to have adequate knowledge of HIV/AIDS. No other socio-demographic characteristic we tested was found to be associated to HIV/AIDS knowledge (Table 4).

For the sub-sample of women who were asked about difficulties in the household, a majority (68%) of women reported some general household tension. For most, this was in the form of relational problems with household members or job/money problems (49%). Biological risk of HIV/AIDS was defined as patient's or spouse's reported history of using blood products, an operation in the past five years, or having a tattoo. Risk of transmission through blood or blood products were reported by 24% of women. Husband's history of operation was

Table 3. Association between specific knowledge of HIV/AIDS and access to information

Knowledge area	No.	%	Adjusted odds ratios and confidence intervals (CI) of association between HIV knowledge and reported access to information sources			
			TV	Radio	Written material	Conversations
Transmission knowledge score (3 or more responses correct)	510	72	3.2 (2.0–5.0)*	1.7 (1.1–2.8)*	3.5 (2.2–5.3)*	2.3 (1.7–3.2)*
Prevention knowledge score (2 or more responses correct)	377	53	3.8 (2.0–5.2)*	1.8 (1.2–2.6)*	2.6 (1.8–3.7)*	1.8 (1.4–2.2)*
Treatment knowledge score (1 or more responses correct)	282	40	2.1 (1.3–3.4)*	1.4 (1.0–2.1)*	1.5 (1.1–2.2)*	1.3 (1.0–1.6)*
Maternal–infant knowledge score (2 or more responses correct)	488	69	2.0 (1.3–3.0)*	1.9 (1.2–2.8)*	2.7 (1.8–3.9)*	1.8 (1.4–2.3)*
Total overall knowledge score (3+)	388	55	2.5 (1.6–4.0)*	1.9 (1.3–2.8)*	2.2 (1.5–3.1)*	1.9 (1.5–2.4)*

*Indicates statistical significance at $P < 0.05$

Table 4. Socio-demographic characteristics and association with overall HIV/AIDS knowledge score

Variables	No.	(%)	Associated knowledge of HIV/AIDS
<i>Socio-demographic characteristics (n=707)</i>			
Woman's education			
Illiterate/primary	230	33	1.0
Secondary or above	477	67	5.8 (3.3–10.1)*
Husband's education			
Illiterate/primary	135	19	1.0
Secondary or above	572	81	2.4 (1.3–4.5)*
Language spoken			
Marathi	495	70	1.0
Hindi or others	212	30	0.7 (0.4–1.1)
Husband's occupation			
Unemployed or labour	290	43	1.0
Higher status employment	376	56	1.5 (1.1–2.0)*

*Indicates statistical significance at $P < 0.05$ **Table 5.** Reported household difficulties and association with overall HIV/AIDS knowledge score

Reported household difficulties (n=283)	No.	%	Associated knowledge of HIV/AIDS
Job or financial problems	102	36	1.4 (0.9–2.3)
Family difficulties, child, marital	69	25	1.6 (0.9–2.8)
Health/medical	34	12	0.9 (0.4–1.8)
General household tensions (any of the above)	138	49	1.4 (0.9–2.2)
Patient history of blood transfusion or tattoo/operation	53	19	1.4 (0.8–2.6)
Patient's husband's history of blood transfusion or tattoo/operation	13	5	0.2 (0.1–0.9)*
Biological risk	65	23	0.9 (0.5–1.6)
Physical, mental abuse	46	16	2.3 (1.2–4.5)*
Husband's or other's drinking problem	63	22	1.0 (0.6–1.8)
Reported abuse	85	30	1.5 (0.9–2.5)
Husband travelling with job	39	14	1.3 (0.8–2.6)
Husband's sexual relations with others	20	7	2.1 (0.8–5.7)
Husband's risk	55	20	1.7 (0.9–3.1)
Woman's risk (score that includes husband's risk+ reported abuse)	121	43	1.7 (1.1–2.8)*

*Indicates statistical significance at $P < 0.05$

significantly associated with less chance of having HIV knowledge, the reasons for which are unclear. Neither general household tension nor woman's biological risk was associated with knowledge of HIV/AIDS (Table 5).

Serious problems, such as physical or mental abuse by family members or their spouse's alcohol or drug abuse were reported by 30% of all women. Specific risk factors such as their spouse having

multiple partners or their spouse having to travel regularly for work were reported by 20% of the women. We found women who had reported mental or physical abuse were more than twice as likely to have adequate HIV/AIDS knowledge compared with women reporting no such abuse. Using a combined score to assess women's overall social risk (additive score of household abuse, spouse's abuse of alcohol or drugs and reported spouse's multiple sexual partners), we found these women were 70% more likely to have adequate HIV/AIDS knowledge compared with women who had not reported any such risks. We found no relationship between likelihood of having a high social risk score and educational level of woman, husband, occupation of either partner, household language or religion.

Each of the 707 women were screened and tested for HIV/AIDS. Of these, 16 tested positive for the virus (2.2%). We found no relationship between HIV status and educational level, household environment or social risk scores. However, given the small number of HIV positives, it was unlikely to find statistically significant associations.

Discussion

The government's efforts to change behaviour through information, education, and communication have focused mainly on involving non-governmental agencies in training, support, and outreach, and on preparing materials for the mass media. These efforts appear to be having an impact. Early on in the epidemic, Jacob and colleagues⁸ reported that in Tamil Nadu, 29% of the women and 58% of the men attending a medical outpatient department (i.e., for any illness) were aware of AIDS, however, only 12% of the women and 26% of the men who were attending a clinic for STDs were aware of AIDS. By the early 1990s, Jana and colleagues⁹ reported that among female sex workers in Calcutta, 30% knew of AIDS; almost 70% knew of other sexually transmitted diseases. In a recent study of pregnant women in South India, nearly all had heard of HIV/AIDS and one-third had general knowledge of the disease¹⁰. The most effective means of getting educational AIDS messages out to this population is through TV and written materials such as billboards and newsprint, a finding that is consistent with previous studies^{11–13}. Messages broadcast through the radio do not appear to be as successful at instilling AIDS knowledge in this population of women.

The results of this study indicate that the majority of pregnant women from this urban area of India have a good working knowledge of HIV/AIDS. Therefore, HIV knowledge rates in pregnant women continue to rise and appear to be approaching rates traditionally found in higher risk populations^{9,14}. This is encouraging as only a few years earlier studies found a considerably

lower level of understanding of HIV among married women¹⁵⁻¹⁷.

Still, in this population, knowledge of treatments to prevent mother-to-infant transmission (MIT) is very low, indicating that the recent advances in MIT have still not reached these populations. This gap in knowledge is of critical importance as women who are identified as HIV-positive may not be aware of treatments for their children without additional counselling and education. Efforts to continue voluntary counselling and testing within antenatal clinics are vital to help bridge this gap.

The rate of reported household abuse and/or reported spouse's abuse of alcohol and drugs found in this urban population of pregnant women is similar to rates reported elsewhere in India¹⁸. But, contrary to our original hypothesis, those women reporting such abuse were more knowledgeable about HIV/AIDS, not less. This may be due in part to better exposure to educational materials given by organizations that have already identified these women as 'at risk'. It is not clear from our data, however, if these women are able to translate this knowledge into risk reduction behaviours. As most are married monogamous women, they are faced with limited options to reduce their risk of contracting HIV/AIDS. It is critical that programmes targeted to women at risk for physical or mental abuse address issues of HIV/AIDS risk reduction and effective behaviour change. Future research should continue to explore the acceptance and impact of voluntary counselling and testing for pregnant women in India.

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