Husbands' behavior and wives' risk of sexually transmitted infections and HIV in North India

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Background:

The AIDS epidemic in India has spread very rapidly since HIV was first detected there in 1986 (Simoes et al. 1993). By the mid-1990s, HIV had already spread to the general population in India (Solomon et al. 1998). Likewise, ample evidence has shown that Indian women suffer from a high burden of reproductive disease, disability and death (Bhatia et al. 1997;Koenig et al. 1998;Lal 1993), but little is understood about how they acquire these conditions. Sharp rises in HIV prevalence has been documented among women attending antenatal care clinics in urban areas of India since the mid-1990s (UNAIDS & World Health Organization 1998). The majority of these HIV positive women have been married, monogamous and infected by their husbands. This was observed in New Delhi (Giri et al. 1995), Tamil Nadu (Newmann et al. 2000), and Maharashtra (Gangakhedkar et al. 1997). This pattern is indicative of women's lack of power to protect themselves from their husband's risky sexual activity.

Women in India particularly are at risk for infection due to their low status relative to men in terms of education, paid employment, and individual autonomy (Hawkes & Santhya 2002). Indian women in general suffer lack of social and economic power relative to men, but this is especially true of those living in North India. Because of strong social norms relating sex outside the context of marriage in India, it was assumed until only recently that little non-marital sexual activity took place there except among special populations as truck drivers and sex workers. However, research during the last ten years has shown that a significant proportion of Indian men report both premarital and extra marital sexual activity. A recent study of 2,901 men aged 18-40 years old living in rural districts of five states found that 15.3% to 47.3% of men reported premarital sex, and 6.3% to 37.4% of men reported extra marital sex (Verma & Lhungdim 2004). Even though non-marital sexual activity is not openly condoned for either sex, men have considerably more freedom than women in this sphere for a variety of reasons, such as much greater freedom of movement outside the household. These norms leave married women particularly vulnerable to sexually transmitted infections (Solomon et al. 2003).

This study investigates the association between wives' risk for STIs and HIV—based on their reports of having a genital ulcer or discharge in the past year—and their husbands' risky sexual behavior among couples living in the North Indian states of Uttar Pradesh and Uttaranchal. Patterns of health-seeking behavior among the women reporting symptoms are also explored. The socio-demographic determinants of health seeking behavior for reported symptoms are modeled, testing the influence of women's exposure to various media on the likelihood that they will obtain medical care for potential reproductive tract infections.

Methods:

A survey of a probability sample of couples was conducted among residents of all 4 regions of Uttar Pradesh (UP) and the state of Uttaranchal in North India between January-June 2002. Eligible households were located in one randomly selected rural district and the 2 largest cities in each of these five areas. The sample was designed to select 2/3 of the households from the urban areas, since the risk of HIV transmission in North India is much higher in urban versus

rural areas. All married women aged 15-49 living in the households were interviewed; eligible men were these women's husbands. All respondents were interviewed privately; husbands and wives were unaware of their spouses' responses to the survey. The male questionnaire included a partner history. The total sample size was 3387 couples, with a household refusal rate of 4%.

The two outcome variables used in analyses were women's reports of having either a genital ulcer or discharge "different from their nature", and medical care sought for reported symptoms. The latter investigation was restricted to wives who reported symptoms (n=989 couples). Medical care was defined as treatment at a clinic, hospital, or western doctor's office. Two factors were used to indicate men's risky sexual behavior: any non-marital sex and paying for sex, both during the past year. Women were classified as being exposed to the media if they had watched TV, listened to a radio or read a newspaper within the past two weeks. Other factors examined were several socio-demographic variables including a standard of living index calculated based on the number of household possessions, and husbands' reports of symptoms of sexually transmitted infections.

Descriptive analyses that accounted for the sample design were used to investigate differentials between women reporting symptoms of STIs, based on socio-demographic characteristics the factors associated with men's extramarital and paid sex during the past year. Bivariate associations between treatment-seeking behavior for reported STI symptoms and socio-demographic factors as well as media exposure were also explored. Logistic regression analyses were used to examine the effect of the two types of husbands' risky sexual behavior separately on the likelihood of wives' reported STI symptoms. Likewise, the influence of wives' exposure to the media was investigated using a logistic regression model to control for socio-demographic effects.

Results:

By design, 66% of the women and men lived in the urban areas of UP and Uttaranchal. Table 1 shows the characteristics of the sample, along with husbands' risky sexual activity. About a fifth of women were below age 25, compared with only 8% of men, reflecting the age difference between spouses in India, where husbands tend to be older. Twice as many women (45.9%) than men (22.0%) had no schooling; the opposite was observed for 13 plus years of schooling (women=11.9%, men=20%). While 29.2% of women reported a genital discharge or ulcer during the past year, only 5.6% men reported the same. There were 7.1% men who reported any non-marital sex during the past year, and 2.2 who paid for sex during the past year. Among the people who reported reproductive tract symptoms, more women (53.4%) than men (37.0%) sought medical treatment.

The differentials in women reporting STI symptoms and treatment seeking behavior by socio-demographic and risk factors are shown in Table 2. More women in rural areas, those between the ages of 25-40, less educated and living in poorer households tended to report a genital discharge or ulcer. The differentials between the proportions of women with husbands engaging in risky sex behavior and reporting reproductive tract symptoms were pronounced, and comparable. Almost half of women (43%-47%) married to husbands with these risk factors reported STI symptoms themselves compared to only a little over a quarter of women (28-29%) married to husbands without these risk factors.

The results for women's treatment seeking behavior for reported symptoms were somewhat different. More urban women (53.6%) than rural women (43.9%) sought care. Women in the oldest age group, those more educated and those living in richer households tended to seek care. There were marked differences between the proportions of women who sought care among those exposed to the media (71.8%) versus those who were not (41.5%).

Table 3 shows the results from the logistic regression analyses of the likelihood of women reporting STI symptoms (Models 1 and 2) and those seeking care (Model 3). A separate model was fit for each of the sexual risk variables, since collinearity precludes the use of both

variables in one model. The results of Models 1 and 2 are very similar, as expected, and reflect what was found in the bivariate associations with women's reported symptoms. Women living in urban areas are less likely to report a genital discharge or ulcer, as are the oldest and youngest women and those more educated. Household economic status, as reflected by the standard of living index, did not show a statistically significant association while controlling for other factors. Wives with husbands who reported the same reproductive tract symptoms had an estimated odds of having symptoms themselves that was about two times higher than those with husbands who were symptom free, both in Models 1 (OR=1.91, 95% CI=1.41-2.60) and 2 (OR=2.06, 95% CI=1.52-2.80). After controlling for the shown socio-demographic factors as well as husbands' reported symptoms, Model 1 shows that wives whose husbands reported any non-marital sex in the past year were more likely (OR=1.87, 95% CI=1.41-2.46) to report symptoms of STIs. Likewise, Model 2 shows similar results for women whose husbands reported paid sex during the last year (OR=1.75, 95% CI=1.07-2.85).

Model 3 shows factors influencing the likelihood of women seeking medical treatment for reported symptoms. These results also reflect the findings in the descriptive analyses. Women who were older and those who lived in better off households (the medium category showed a statistically significant relationship—OR=1.60, 95% CI=1.12-2.29—were more likely to seek treatment for their symptoms. Urban residence did not reach statistical significance in these analyses, but the direction of the effect was as expected. Controlling for all these factors, women who were recently exposed to the media were more likely to seek treatment (OR=1.77, 95% CI=1.18-2.64).

Discussion:

These data demonstrate that North Indian wives are put at potential risk for STIs and HIV by their husbands' risky sex behavior. While reported symptoms do not necessarily mean that a woman has an infection, as their predictive value has been observed to be low in other studies, there is a clear association with these symptoms and men's behavior in this study. Also, the association between husbands' symptoms—which were reported independently of their wives'—was also statistically significant. These results reflect the same conclusions as the clinical studies on HIV positive women becoming infected through their husband's risky behavior. The findings of the associations between women's socio-demographic characteristics and treatment seeking behavior were not surprising. However, controlling for these factors, women exposed to the media, a proxy for women's empowerment, were more likely to seek treatment. Both of these analyses support the large body of research documenting better reproductive health outcomes for women with higher levels of autonomy and empowerment in South Asia (Balk 1994;Bloom, Wypij, & Das Gupta 2001). Women's lack of power in their sexual relationships put them at risk for reproductive infections. Further, women with greater levels of empowerment, as indicated by access to the media, are more likely to seek health care for perceived reproductive tract problems.

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Appendix to abstract: Tables

Table 1. Descriptive characteristics of couples and risk factors for STIs among couples living in Uttar Pradesh and Uttaranchal, India (n=3387 couples).

Characteristic	Women		Men	
	n	%	n	%
Age of respondent				
15-24	740	21.8	276	8.1
25-30	944	27.9	730	21.6
31-40	1232	36.4	1328	39.2
41+	471	13.9	1053	31.1
Completed years of schooling				
None	1554	45.9	744	22.0
8	833	24.6	876	25.8
12	597	17.6	1090	32.2
13+	403	11.9	677	20.0
Household standard of living index				
Low	704	21.8	704	21.8
Medium	1754	51.8	1754	51.8
High	929	27.4	929	27.4
Reported gential discharge or ulcer				
Yes	989	29.2	189	5.6
No	2398	70.8	3195	94.4
Husband reported non-marital sex past year				
Yes			239	7.1
No			3148	92.9
Husband reported paid sex past year				
Yes			73	2.2
No			3314	97.8
Sought medical treatment for STI symptom[1]				
Yes	528	53.4	70	37.0
No	461	46.6	119	62.0

[1] Among respondents who reported a genital ulcer or discharge in the past year

Table 2. Differentials in the proportions of women reporting symptoms of STIs and consequently seeking medical care in the past year, by demographic and couple risk factors.

		Genital discharge or ulcer in past year	Sought medical treatment
		n=3387	n=989
Urban residence			
	Yes	26.6	43.9
	No	34.5	53.6
Age of women			
	18-24	25.1	35.5
	25-30	30.2	51.6
	31-40	31.2	59.1
	41+	28.5	65.7
Completed years of schooling by women			
	None	34.2	45.9
	8	30.6	58.4
	12	23.4	62.1
	13+	15.4	77.4
Household standard of living index			
	Low	34.8	37.1
	Medium	30.9	55.4
	High	21.7	67.8
Husband reported gential discharge or ulcer			
	Yes	47.1	
	No	28.1	
Husband reported non-marital sex past year			
	Yes	44.8	-
	No	28.0	-
Husband reported paid sex past year			
	Yes	43.8	-
	No	28.9	-
Wife exposed to media past two weeks			
	Yes	-	48.5
	No	-	71.8

Table 5. Odds ratios from logistic regression models for the likelihood of women having STI symptoms and seeking medical treatment for them, predicted by demographic and couple risk factors.

		Wife reported genital discharge or ulcer		Wife sought Treatment
		Model 1 (n=3387) OR (95% CI)	Model 2 (n=3387) OR (95% CI)	Model 3 (n=989) OR (95% CI)
Residence				
	Urban	0.80 (0.66-0.96)	0.80 (0.66-0.97)	1.19 (0.87-1.62)
	Rural (ref)	1.0	1.0	1.0
Age of woman				
	18-24	0.74 (0.57-0.96)	0.76 (0.58-1.00)	0.31 (0.19-0.50)
	25-30	1.06 (0.82-1.36)	1.07 (0.83-1.38)	0.60 (0.38-0.93)
	31-40	1.12 (0.87-1.41)	1.12 (0.88-1.42)	1.81 (0.53-1.24)
	41+ (ref)	1.0	1.0	1.0
Completed years of schooling				
	None	2.36 (1.67-3.32)	2.37 (1.68-3.34)	1.40 (1.01-2.00)
	8	2.26 (1.59-3.12)	2.24 (1.60-3.14)	1.45 (0.91-2.30)
	12	1.61 (1.14-2.27)	1.60 (1.13-2.25)	1.85 (0.88-3.87)
	13+ (ref)	1.0	1.0	1.0
Household standard of living index				
	Low (ref)	1.0	1.0	1.0
	Medium	1.03 (0.83-1.28)	1.03 (0.83-1.29)	1.60 (1.12-2.29)
	High (ref)	0.94 (0.69-1.27)	0.93 (0.69-1.26)	1.61 (0.94-2.74)
Husband reported genital discharge or ulcer				
	Yes	1.91 (1.41-2.60)	2.06 (1.52-2.80)	
	No (ref)	1.0	1.0	
Husband reported non-marital sex past year				
	Yes	1.87 (1.41-2.46)	-	-
	No (ref)	1.0		
Husband reported paid sex past year				
	Yes		1.75 (1.07-2.85)	
	No (ref)			
Wife exposed to media past 2 weeks				
	Yes	-	-	1.77 (1.19-2.64)
	No			1.0