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Association Between Decision Making Autonomy and Knowledge of HIV/AIDS Prevention among ever Married Women in Bangladesh

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This study investigated the association of decision making autonomy with HIV/AIDS prevention knowledge among married women in Bangladesh. Data were used from the 1999-2000 Bangladesh Demographic and Health Survey (BDHS). For measuring women's autonomy in decision making, we used six factors namely who take the final decision about: own health care; child health care; purchasing of large household materials; purchasing of household things for daily needs; visiting family, friends and relatives and what foods to be cooked. Using these factors, a combined score for autonomy was constructed using Likert method. Univariate analysis showed that 84% of women did not have any HIV/AIDS prevention knowledge. Multivariate logistic regression analysis revealed that women's autonomy in decision making was an important correlate of HIV/AIDS prevention knowledge even after adjusting for some potential factors such as age, education, occupation, place of residence, exposed to radio, television and newspaper. Multivariate adjusted odds ratio revealed that women with highest score of autonomy had significantly higher knowledge of HIV/AIDS and prevention compared with women with no autonomy. Since Bangladesh is at risk for HIV/AIDS epidemic for several behavioral and biomedical risk factors, increasing women's autonomy might be an important path to combat the consequences of HIV/AIDS in Bangladesh.

Key words: Women autonomy, HIV/AIDS prevention

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INTRODUCTION

In Bangladesh, the first HIV case was detected in 1986 and then the number of cases has been increasing. Presently this country is considered to be at high risk for HIV/AIDS epidemic due to the existence of several behavioral and biomedical risk factors (Gibney *et al*., 1999a, b). Behavioral factors such as unprotected sex, heterosexuality, homosexuality, intravenous drug use, limited knowledge about HIV/AIDS and lack of public awareness including misconceptions may contribute in spreading HIV/AIDS over there (Gibney *et al*., 1999a). Biomedical factors such as unregulated blood transfusion without screening for HIV mainly donated by professional donors, non-sterile injections in non-formal and formal health care settings and high prevalence of sexually transmitted infections (STIs) may function as co-factors for HIV transmission (Gibney *et al*., 1999b). Bangladesh's proximity to India and Myanmar (countries with higher prevalence of HIV/AIDS) also increases the fear of an epidemic in Bangladesh (Gibney *et al*., 1999a; Islam *et al*., 1999). Now it is a concern that factors leading to the rapid spread of HIV in India, which is the second largest affected country in the world, could play similar role in Bangladesh because of two nations' socio-cultural, economic and demographic similarities (Gibney *et al*., 1999b). Frequent movement of the people of Bangladesh to the neighbouring HIV/AIDS epidemic countries as well as high rates of illiteracy and poverty may make the country at risk of the spread of HIV/AIDS (Islam *et al*., 1999).

Considering the overall situation of HIV/AIDS in Bangladesh, it is important to assess the knowledge of preventing AIDS among the ever married women of reproductive ages between 10 to 49 years as well as to find some ways for improving their AIDS prevention activities. This study was an attempt in this regard, which mainly assessed the association of women's autonomy in decision making with the knowledge of AIDS prevention activities, as this particular area is rarely studied in Bangladesh and elsewhere.

According to available literatures, autonomy is a universal concept that widely varies in meaning and application, depending upon context and setting. It can be observed in individuals, families, institutions and communities. In a generic sense, the concept of autonomy may be defined as a state of being independent or self-governing (Spear and Kulbok, 2004). According to Ghuman (2003), woman autonomy may be defined as a woman's ability to make and execute decisions regarding personal matters of importance to her on the basis of her power over others, access to information, control over material resources and freedom from violence by her husband or other men. Kukla (2005) mentioned that autonomy depends on two broad conditions: (I) an autonomous agent is the center or location of her own decisions and actions; that is, they originate freely from her rather than being imposed upon her from the outside and (ii) an autonomous agent more or less understands the facts about her situation and can engage in practical reason on the basis of this understanding. From the study of Dixon-Mueller (1998), autonomy is multidimensional and it refers to an individual's capacity to act independently of the authority of others. Autonomy implies freedom, such as the ability to leave the house without asking anyone's permission or to make personal decisions. Household decision making is also often used as a measure of autonomy. Sometimes some indicators such as years of schooling (education) and wage employment (occupation) may be used as the proxies of women's autonomy. Mason (1997) mentioned that being married for a long time, being married to the household head, having children and discussing different issues frequently with husband are also indicators of enhanced women autonomy.

Fortunately the 1999-2000 Bangladesh Demographic Health Survey (BDHS), which provided nationally representative sample of 10,544 ever married women, included some questions which could directly measure the decision making women's autonomy. We considered six different questions related to household decision making autonomy and used them for developing some score (see m ethodology section) applying Likert method. Briefly we hypothesised that woman autonomy in decision making is positively associated with the knowledge of HIV/AIDS prevention activities, that is, women with h igher score of autonomy had higher preventive knowledge of AIDS. We assessed the hypothesis by using the data of 1999-2000 BDHS.

MATERIALS AND METHODS

The detailed methodology of 1999-2000 BDHS is available elsewhere (NIPORT, 2001). However, a brief discussion of the selected variables is given here. For measuring the autonomy, women were asked to respond about their final say regarding six items: (I) women's own health care, (ii) child health care, (iii) purchasing large household materials, (iv) purchasing household things for daily needs, (v) visiting family, friends, or relatives and (vi) food items to be cooked each day. Since all the six questions were similarly phrased into the questionnaire, only one of them (e.g., respondent's own health care) is

discussed here in detail for clarity. The question regarding respondent own health care was like this who is the person in your family usually has the final say on your own health care? The answers were coded from 1 to 5 namely 1 = respondent, 2 = husband, 3 = respondent and husband jointly, 4 = someone else and 5 = respondent and someone else jointly. However, for the purpose of our present study we assigned different scores for coding the answers for measuring the autonomy. A score of 5 (highest autonomy score) was assigned to the answer respondent which meant she herself was the person in the family who usually has the final say for own health care and 4 was assigned when the final say was made by both respondent and husband jointly. Similarly the scores of 3, 2 and 1 (lowest autonomy score) were assigned when the final say was usually made by respondent and someone else, by husband and by someone else, respectively. The scores of the six questions were then added to make a combined score of autonomy, which varied from 6 (all questions were related to someone else) to 24 (all questions were related to respondent herself). The total score is divided into 4 categories: 6-12 (almost no autonomy), 13-18 (low autonomy), 19-24 (moderate autonomy) and 25-30 (high autonomy). According to the data, the percentages of women with no, low, moderate and high autonomy were 3, 11.2, 40 and 41.6%, respectively.

We also used several control variables (with categories given in parenthesis) such as age, education (no education, 1-5 years education, 6-10 years education and 11+ years education), occupation (not working, managerial or better jobs, manual or lower types jobs), place of residence (urban, rural), region of residence (six administrative division: Barisal, Chittagong, Dhaka, Khulna, Rajshahi, Sylhet), religion (Muslim, others), number of living children, listening radio every week (yes, no), watching television every week (yes, no), reading newspaper every week (yes, no), discussed family planning with husband (yes, no) and contraceptive use (yes, no).

Each woman was also asked to mention the ways for avoiding AIDS. Using the responses, all ways of preventing AIDS were also classified into 3 groups (taken as dependent variables): (I) prevention by condom use during sex (condom based), (ii) prevention by avoiding sex with commercial sex workers/prostitutes, injecting drug users and multiple partners; avoiding homosexuality, limit sex within marriage, having sex with only one partner (sexual activity based) and (iii) avoiding blood transmissions, non-sterilized injections, razor blades and others (non-sexual activity based) excluding avoiding kissing, mosquito bites and seeking protection from traditional healer. Briefly these three dependent variables, dichotomized (either 0 or 1) for logistic regression analysis, were whether the women reported following method (s) to prevent AIDS: (I) using condom (yes = 1, no = 0), (ii) adopting any sexual activities (yes = 1, no = 0) and (iii) practicing any non-sexual activities (yes = 1, no = 0).

Firstly, logistic regression model included all the above-mentioned control variables and estimated their odds ratios (ORs) for AIDS prevention knowledge. Secondly, logistic regression analysis estimated the ORs by each of the individual and combined (based on Likert method) autonomy variables after adjusting for all control variables, taking respondent (for individual autonomy variable) and no autonomy (for combined autonomy variable) as reference category. p for trend was also calculated taking ordinal value of the combined autonomy variable.

RESULTS

Table 1 reveals that 84.0% of the women did not have any idea about the ways to prevent AIDS. Only 16% reported at least one method to avoid AIDS, followed by at least two methods (8.9%), at least three methods (3.3%) and at least 4 methods (1.0%), respectively (Table 1).

Table 2 presented summary information for the selected control variables used in the logistic regression analysis. First two columns presented the number and percentage of women. Under the preventing methods of AIDS, each option (relating condom, sexual, non-sexual, all) revealed the distribution of women who reported at least one way to avoid AIDS and ORs of logistic regression analysis (Table 3). According to the Table 2, use of condom as a preventive method of AIDS was significantly associated with number of living children, education, place of residence, region of residence, listening to radio every week, watching TV every week, reading newspaper every week, current contraceptive use and family planning discussion with husband. Sexual

Table 1: Distribution of women by number of reported AIDS prevention ways

Number of ways	Number of women	%
0	8852	84.0
1	753	7.1
2	595	5.6
3	237	2.2
4	70	0.7
5	21	0.2
≥6	15	0.2
≥1	1691	16.0
≥2	938	8.9
≥3	343	3.3
≥4	106	1.0

Table 2: Multivariate adjusted odds ratio (OR) for AIDS prevention by selected control variables

			Preventing methods of AIDS based on							
	Subjects		Condom		Sexual activities		Non-sexual activities		All (at least one way)	
Women autonomy	n	%[a]	%	OR	%	OR	%	OR	%	OR
Age (continuous)	10544	100.0	5.7	1.00	11.8	1.03***	5.7	1.04***	16.0	1.03***
No. living children (continuous)	10544	100.0	5.7	0.84***	11.8	0.91**	5.7	0.92	16.0	0.89***
Education:										
No education	4575	43.4	0.9	1.00	2.7	1.00	1.2	1.00	3.7	1.00
Primary education	2997	28.4	2.9	2.16***	6.2	1.72**	2.9	1.91***	9.3	1.88***
Secondary education	2415	22.9	12.0	5.43***	24.7	5.17***	11.4	4.56***	33.8	5.74***
Higher secondary education	557	5.3	32.5	9.60***	6.12	12.01***	33.9	9.06***	76.8	17.11***
Occupation:										
Not working	8262	78.4	5.7	1.00	12.1	1.00	5.7	1.00	16.3	1.00
Technical, professional, Managerial	175	1.7	1.7	0.75	5.1	0.94	2.3	0.61	5.7	0.59
Else (agriculture, skilled, etc.)	048	19.4	6.1	1.38**	11.4	1.01	6.3	1.10	16.1	1.16
Place of residence:										
Urban	3150	29.9	12.0	1.00	27.2	1.00	13.8	1.00	35.2	1.00
Rural	7394	70.1	3.0	0.50***	5.3	0.37***	2.3	0.42***	7.9	0.35***
Region of residence:										
Barisal	981	9.3	4.8	1.00	13.9	1.00	5.6	1.00	16.9	1.00
Chittagong	1950	18.5	4.9	0.83	11.6	0.53***	5.1	0.60**	15.4	0.57***
Dhaka	2539	24.1	7.5	1.40	16.3	0.90	8.1	1.08	21.5	1.11
Khulna	1817	17.2	8.1	1.56*	11.0	0.53***	5.2	0.72	17.2	0.77
Rajshahi	2118	20.1	3.7	0.87	7.2	0.42***	4.1	0.77	10.6	0.53***
Sylhet	1139	10.8	3.7	0.92	10.5	0.73	5.5	0.89	12.3	0.67*
Religion:										
Islam	9135	86.6	5.6	1.00	11.5	1.00	5.4	1.00	15.5	1.00
Else	1407	13.3	6.2	0.83	14.1	0.78*	7.7	0.97	19.3	0.85
Listening to radio every week:										
No	7447	70.6	3.2	1.00	8.7	1.00	4.3	1.00	11.4	1.00
Yes	3095	29.4	11.7	2.03***	19.3	1.25**	9.1	1.10	27.2	1.53***
Watching TV every week:										
No	6386	60.6	1.6	1.00	3.1	1.00	1.2	1.00	4.6	1.00
Yes	4156	39.4	12.1	2.35***	25.2	3.28***	12.7	3.68***	33.6	3.21***
Reading newspaper every week:										
No	9394	89.1	3.4	1.00	7.5	1.00	3.3	1.00	10.5	1.00
Yes	1148	10.9	24.5	1.64***	47.6	1.72***	25.3	1.63***	61.1	1.92***
Use contraceptive currently:										
No	5236	49.7	4.3	1.00	8.8	1.00	4.4	1.00	12.1	1.00
Yes	5308	50.3	7.1	1.10	14.8	1.21*	7.1	1.06	19.9	1.23
Discussed FP with partner last year:										
No	5273	50.0	4.4	1.00	10.1	1.00	4.5	1.00	13.4	1.00
Yes	4409	41.8	8.1	1.25*	15.3	1.17*	7.6	1.37**	20.8	1.23**

Significance level: ***$p \leq 0.001$, **$p \leq 0.01$, *$p \leq 0.05$; Missing values are excluded. Total is not always 10,544 due to missing data; [a]% are calculated including missing observation

activity based prevention activities and prevention activities by at least one method were significantly associated with all the control variables except occupation (sexual activity based and based on at least one method) and religion (based on at least one method). AIDS prevention knowledge through condom use in rural areas was significantly lower than urban areas. Education, access to mass and printed media such as radio, television and newspapers were significantly associated with the knowledge of AIDS prevention through condom use.

Since almost all the control variables were significantly associated with AIDS prevention activities, we inserted all of them into the logistic regression model for estimating the multivariate adjusted odd ratios by individual autonomy variable (Table 3). Two autonomy variables related to own health care and child health care were significantly associated with the knowledge of AIDS prevention through condom use. Three autonomy variables related to child health care, household purchases of daily needs and visits to family, friends

Table 3: Multivariate adjusted odds ratio (OR) for AIDS prevention by individual autonomy variables

	Respondents /women		Preventing methods of AIDS based on							
			Condom		Sexual activities		Non-sexual activities		All (at least one way)	
Autonomy variables	n	%	%	OR	%	OR	%	OR	%	OR
Final say about:										
Own health care										
Respondent	2249	21.3	6.1	1.00	15.3	1.00	7.1	1.00	19.4	1.00
Respondent and husband	3056	29.0	7.0	0.89	13.7	0.70***	6.9	0.89	18.6	0.75**
Respondent and else	613	5.8	4.4	0.52**	10.6	0.70*	5.2	0.85	13.9	0.62**
Husband	3894	36.9	4.7	0.77	9.6	0.64***	4.5	0.87	13.3	0.68***
Someone else	728	6.9	5.4	0.96	6.0	0.39***	3.6	0.81	11.5	0.65*
Child health care										
Respondent	2076	19.7	6.0	1.00	15.1	1.00	7.2	1.00	19.9	1.00
Respondent and husband	3750	35.6	6.7	0.93	14.1	0.81*	7.2	0.98	18.9	0.79*
Respondent and else	698	6.6	4.9	0.61*	11.3	0.78	4.9	0.78	14.8	0.62**
Husband	2804	26.6	3.4	0.70*	6.9	0.58***	3.2	0.72*	9.8	0.56***
Someone else	790	7.5	6.1	0.85	7.3	0.39***	3.3	0.56*	12.4	0.50***
Large household purchases										
Respondent	1154	10.9	6.0	1.00	14.8	1.00	7.0	1.00	18.9	1.00
Respondent and husband	4080	38.7	6.6	0.84	14.8	0.82	7.1	0.99	19.5	0.86
Respondent and else	1154	10.9	5.9	0.65	10.9	0.54***	5.5	0.77	15.7	0.57***
Husband	3093	29.3	4.0	0.74	8.2	0.61***	3.9	0.86	11.2	0.63***
Someone else	1054	10.0	6.8	0.97	8.6	0.45***	4.5	0.85	14.4	0.65***
Household purchases for daily needs										
Respondent	2088	19.8	6.7	1.00	16.7	1.00	8.2	1.00	21.1	1.00
Respondent and husband	3438	32.6	6.2	1.01	13.3	0.87	6.7	0.96	17.8	0.96
Respondent and else	1036	9.8	5.5	0.71	11.3	0.70*	4.8	0.93*	14.9	0.63***
Husband	2871	27.2	3.9	0.83	7.8	0.63***	3.5	0.70*	10.9	0.69***
Someone else	1098	10.4	7.2	1.04	9.2	0.51***	4.9	0.84	15.7	0.76*
Visits to family, friends, or relatives										
Respondent	1552	14.7	5.2	1.00	14.2	1.00	6.9	1.00	18.2	1.00
Respondent and husband	4001	37.9	7.2	1.12	14.8	0.85	7.6	1.03	19.9	0.92
Respondent and else	978	9.3	6.2	0.89	11.1	0.66*	5.8	0.87	15.8	0.67**
Husband	3066	29.1	3.9	0.89	8.4	0.70**	3.4	0.72*	11.0	0.66***
Someone else	937	8.9	5.3	0.92	7.3	0.43***	3.4	0.70	12.7	0.63**
What food should be cooked each day										
Respondent	6848	64.9	5.0	1.00	11.8	1.00	5.8	1.00	15.6	1.00
Respondent and husband	1145	10.9	7.2	1.22	14.4	1.09	6.5	0.91	19.0	1.11
Respondent and else	1018	9.7	6.7	0.81	11.8	0.75*	5.8	0.95	16.3	0.69**
Husband	445	4.2	2.9	0.73	5.8	0.58*	3.1	0.76	8.3	0.59*
Someone else	1081	10.3	9.0	1.20	11.8	0.66**	5.6	0.83	18.9	0.87

Note: Adjusted for age (continuous), education, occupation, place of residence, region of residence, religion, number of living children, listening radio every week, watching television every week, reading newspaper every week, discussed family planning with husband and contraceptive use.
Significance level: ***$p \leq 0.001$, **$p \leq 0.01$, *$p \leq 0.05$. Excluding missing observation

and relatives were significantly associated with AIDS prevention activities through non-sexual activities. However, all the autonomy variables showed significant association with sex-related prevention activities as well as prevention activities by at least one method. For most of the cases, lowest preventive knowledge for all prevention groups, revealed by ORs, was found for those women when the decision was made by their husband and by someone else as compared to women who herself (reference category) took the decision.

Table 4 showed the ORs for the knowledge of AIDS prevention activities by combined autonomy variable (based on Likert method). Use of condom as AIDS prevention activity differed insignificantly among the autonomy categories. Sex related prevention activities were significantly higher for those women who revealed medium (OR = 2.36, $p \leq 0.01$) and higher (OR = 3.42, $p \leq 0.001$) autonomy as compared to no autonomy. Although other method was insignificantly associated with autonomy variable, p for trend was significant. For all methods, only higher autonomy significantly (OR = 2.26, $p \leq 0.001$) differed from no autonomy. Table 5 showed the association of combined autonomy variable with whether the women knew: at least two AIDS prevention ways and at least three ways, respectively (Table 5). Medium (OR = 2.44, $p \leq 0.05$) and higher (OR = 3.14, $p \leq 0.01$) autonomy showed

Table 4: Multivariate adjusted odds ratio (OR) for AIDS prevention knowledge by autonomy score

			Preventing methods of AIDS based on:							
	Respondents/women		Condom		Sexual activities		Non-sexual activities		All (at least one method)	
Women autonomy score	n	%	%	OR	%	OR	%	OR	%	OR
No autonomy	314	3.0	4.8	1.00	5.7	1.00	2.9	1.00	10.5	1.00
Low	1184	11.2	6.1	1.46	7.6	1.87	3.5	1.46	12.8	1.62
Medium/moderate	4213	40.0	4.3	1.08	9.0	2.36**	4.5	1.70	12.5	1.56
High	4384	41.6	6.5	1.35	15.6	3.42***	7.5	1.94	20.2	2.26***
Missing	449	4.3								
p for trend				0.448		<0.001		0.032		<0.001

Note: Adjusted for age (continuous), education, occupation, place of residence, region of residence, religion, number of living children, listening radio every week, watching television every week, reading newspaper every week, discussed family planning with husband and contraceptive use.
Significance level: ***p≤0.001, **p≤0.01, *p≤0.05. Excluding missing observation

Table 5: Multivariate adjusted odds ratio (OR) for AIDS prevention knowledge (by number of ways) by autonomy score

	Preventing methods of AIDS					
			Knows at least 2 methods		Knows at least 3 methods	
Autonomy score	Number (%)	OR	Number (%)	OR	Number (%)	OR
No autonomy	13	4.1	1.00	5	1.6	1.00
Low	63	5.3	1.76	15	1.3	1.00
Medium/moderate	287	6.8	2.44*	94	2.2	1.79
High	518	11.8	3.14**	195	4.4	2.30
Missing	450	-		450	-	
p for trend			<0.001			0.002

Note: Adjusted for age (continuous), education, occupation, place of residence, region of residence, religion, number of living children, listening radio every week, watching television every week, reading newspaper every week, discussed family planning with husband and contraceptive use.
Significance level: ***p≤0.001, **p≤0.01, *p≤0.05. Excluding missing observation

significantly higher Ors for at least two AIDS prevention methods. However, all the autonomy categories were insignificantly associated with at least three AIDS prevention methods, although p for trend was significant.

DISCUSSION

Overall knowledge of AIDS prevention activities among ever married women was very low in Bangladesh as more than 80% of the women could not even mention at least one way to prevent AIDS. This situation indicates, somehow, the alarming situation in Bangladesh as this country is supposed to be at high risk for the existence of many behavioral and biomedical risk factors (Gibney *et al*., 1999a, b; Islam *et al*., 1999). Rural based poor socio-economic conditions of the majority people, high prevalence of STIs, low knowledge of HIV/AIDS prevention including low rate of condom use and other HIV/AIDS risk factors available in Bangladesh (Gibney *et al*., 1999a, b; Islam *et al*., 1999; Caldwell *et al*., 1999; Khan, 2002; Khan *et al*., 2003) indicate that if the country's present HIV/AIDS prevalence level which is <1 per 1000 adult (Population Reference Bureau, 2002), further increases and reaches at the level of some other developing countries such as India and Thailand, it would be difficult to curve the HIV/AIDS prevalence. Therefore proper cautions and strategies for controlling the HIV/AIDS epidemic are urgent in Bangladesh. In this regard, prevention methods might be the best strategy like in other resource poor countries where 95% of the total HIV/AIDS cases are living and only few of them receive highly active antiretroviral drugs treatment (Furber *et al*., 2004).

Since treatment of HIV/AIDS is very costly and hence unmanageable for majority people, Bangladesh should try to increase people's knowledge of HIV/AIDS prevention activities rather than emphasizing on antiretroviral treatments. Several HIV/AIDS prevention strategies are already reported for developing countries. For instance, managing STIs is one of the important strategies and pre-conditions in preventing HIV/AIDS as STIs facilitate transmission and acquisition of HIV/AIDS. Unfortunately resources and laboratories for diagnosing the STIs, which is relatively cheaper in diagnosing and treating, are very scarce in developing countries (Bosu, 1999; Mayaud *et al*., 1998). Moreover, many STI patients directly consult at the first level of primary care or pharmacy, where even basic training of health care providers in STI management is lacking (Mayaud *et al*., 1998; Khan *et al*., 2006). Some recent studies in developing countries (Khan *et al*., 2006; Chalker *et al*., 2000; Ward *et al*., 2003) also indicated that their treatment quality for managing STIs are very much disappointing. Bangladesh is not an exception in this regard and therefore, this country needs to utilize some other

strategies to maintain the low level of HIV/AIDS prevalence.

Disseminating information through mass and printed media might be another important strategy to increase the HIV/AIDS prevention knowledge. Because few studies (Khan *et al*., 2004; Lagarde *et al*., 1998; Myhre and Flora, 2000; Panford *et al*., 2001) indicated that some media such as radio, television, newspapers and magazines are the effective way to disseminate the AIDS prevention knowledge including Bangladesh. However, uses of these mass and printed media are very limited in rural areas of Bangladesh where about 80% people are living with limited education. For instance, only 32 and 13% of the women owned radio and television in rural areas although these rates were 50% and 48% in urban areas, respectively (Khan *et al*., 2004).

To our knowledge, present study determined another dimension (women autonomy in decision making) for the first time, which could play an important role in AIDS prevention knowledge and activities in Bangladesh. Our study strongly revealed that higher score of women autonomy (both individual and combined) was significantly associated with the knowledge of AIDS prevention activities (by at least one method) even after adjusting for many potential factors including printed and mass media. By three different groups of prevention activities, only sexual based activities were significantly associated with medium and higher score of women autonomy. Information revealed that condom based knowledge to prevent AIDS was very low and not associated with the women autonomy in decision making. However, some other factors such as increasing education, increasing access to mass and printed media such as radio, television and newspaper could play an important role in improving the knowledge of condom-based AIDS prevention activity.

Since well-trained and motivated human resources such as religious and community leaders and teachers are important for achieving the successes in HIV/AIDS prevention (WHO/ROEM, 2002), Bangladesh may use this option by involving the huge number of potential human resources such as health and social workers working at both government and non-government organizations; religious, spiritual and community leaders; school teachers and elite persons in the society such as journalists, doctors and lawyers who are widely available all over the country. Unfortunately their present involvement and performance in disseminating AIDS prevention knowledge is highly unsatisfactory in Bangladesh (Khan *et al*., 2004). Therefore this particular sector needs more attention from the government as well as from other influential authorities for improving the situation. Furthermore, more HIV/AIDS campaign to motivate and educate religious and community leaders (Wolffers, 1997), face-to-face communication (Kiragu, 2001), institutional education regarding STIs and HIV/AIDS including risk factors (Khan *et al*., 2004), health education to reduce risky sexual behavior and to increase condom use (Mayaud *et al*., 1998) may be effective in Bangladesh.

How to increase the women autonomy in the family should be discussed briefly? One of the ways to increase the women autonomy is to increase the educational level of women. Because it is reported that woman's decision making authority and her social and economic self reliance are not enhanced until relatively high levels of education have been attained (Dixon-Mueller, 1998). Educating women results in improved productivity, income and economic development, which provide better quality of life. It improves empowerment which increase autonomy in every sphere of life (Jejeebhoy, 1995) indicated by greater control over material and intellectual resources, increased self reliance, enhanced independent rights and increased capacity to challenge the ideology of patriarchy and gender based discrimination against women (Yesudian, 2004). It should be noted that Bangladesh government with cooperation from international and national organizations is trying to increase the female literacy rate and hence the average education by providing free education and scholarship until college level. Nonetheless, formal education alone may not contribute substantially women's empowerment unless it enables them to find income-generating activities. Therefore, motivating women to involve with income generating activities through government as well as non-government organizations such as Proshika, Grameen Bank and BRAC, creating more employment opportunities with higher wages for women should be considered to improve women autonomy. Since increasing mobility of women outside homestead exposed them into modern views, increase social interactions and creates opportunities to exchange ideas and contemporary issues with others which ultimately increase the women autonomy (Hossain and Khan, 1997), women should be encouraged to involve them with outside home activities by reducing the barriers to go outside.

The main strength of the study was that the results were based on the nation-wide representative data. However, some limitations should also be discussed. First, this study used cross-sectional data which precludes the establishment of a causal association between women autonomy and HIV/AIDS prevention knowledge. Second, arbitrary scorning (from 1 to 5) for

decision making autonomy variables and categorization of combined autonomy variables into four groups is another concern. However, this type of scoring was used by other studies (Yesudian, 2004; Casique, 2001).

In conclusion, women autonomy in decision making was significantly associated with HIV/AIDS prevention knowledge in Bangladesh. Therefore, suitable strategies should be developed, from both government and non-government sides, to improve the women autonomy to reduce the HIV/AIDS consequences by practicing sexual and non-sexual prevention activities. Particular emphasis should be given on education, exposure to mass media, work participation and freedom of movement which are some of the means of gaining women status and autonomy.

REFERENCES

Bosu, W.K., 1999. Syndromic management of sexually transmitted diseases: Is it rational or scientific? Trop. Med. Intl. Health, 4: 114-119.

Caldwell, B., I. Pieris, B. Khuda, J. Caldwell and P. Caldwell, 1999. Sexual regimes and sexual networking: The risk of an HIV/AIDS epidemic in Bangladesh. Soc. Sci. Med., 48: 1103-1116.

Casique, I., 2001. Women autonomy and power and use of contraception in Mexico: What difference does it make? Salvador, Brazil: XXIV IUSSP General Population Conference, August 18-24, 2001.

Chalker, J., N.T.K. Chuc, T. Falkenberg, N.T. Do and G. Tomson, 2000. STD management by private pharmacies in Hanoi: Practice and knowledge of drug sellers. Sex Transm. Inform., 76: 299-302.

Demographic and Health Survey data. J. Health Popul. Nutr., 20: 130-137.

Dixon-Mueller, R., 1998. Female empowerment and demographic processes: Moving beyond Cairo. Policy and Research paper N°13. Paris, France: International Union for the Scientific Study of Population (IUSSP).

Furber, A.S., I.J. Hodgson, A. Desclaux and D.S. Mukasa, 2004. Barriers to better care for people with AIDS in developing countries. Br. Med. J., 329: 1281-1283.

Ghuman, S.J., 2003. Women's autonomy and child survival: A comparison of Muslims and non-Muslims in four Asian countries. Demography, 40: 419-436.

Gibney, L., P. Choudhury, Z. Khawaja, M. Sarkar and S.H. Vermund, 1999a. Behavioral risk factors for HIV/AIDS in a low-prevalence Muslim nation: Bangladesh. Intl. J. STD AIDS, 10: 186-194.

Gibney, L., P. Choudhury, Z. Khawaja, M.M. Sarkar, N. Islam and S.H. Vermund, 1999b. HIV/AIDS in Bangladesh: An assessment of biomedical risk factors for transmission. Intl. J. STD AIDS, 10: 338-346.

Hossain, M.K. and M.M.H. Khan, 1997. The influence of modernity and mobility on contraceptive use in rural Bangladesh. Jahangirnagar University J. Sci., 21: 167-180.

Islam, M., A.K. Mitra, A.H. Mian and S.H. Vermund, 1999. HIV/AIDS in Bangladesh: A national surveillance. Intl. J. STD AIDS, 10: 471-474.

Jejeebhoy, S.J., 1995. Women Education, Autonomy and Reproductive Behavior: Experience from Developing Countries. Oxford: Oxford University Press.

Khan, M.A., 2002. Knowledge on AIDS among female adolescents in Bangladesh: evidence from the Bangladesh

Khan, M.M.H., M.A. Kabir and M.A. Matin, 2003. Factors affecting STIs among married men in Bangladesh. J. Fam. Welfare, 49: 38-44.

Khan, M.M.H., M. Kabir and M. Mori, 2004. Impact of various sources of AIDS information among ever married men and women in Bangladesh. J. Health Population Developing Countries (URL:http://www.jhpdc.unc.edu/).

Khan, M.M.H., S. Wolter and M. Mori, 2006. Post-training quality of syndromic management of sexually transmitted infections by chemists and druggists in Pokhara, Nepal: is it satisfactory? Intl. J. Qual. Health Care, (In Press).

Kiragu, K., 2001. Youth and HIV/AIDS: can we avoid catastrophe? Population Reports, Series L (20). Baltimore: John Hopkins University Bloomberg School of Public Health, Fall.

Kukla, R., 2005. Conscientious autonomy: displacing decisions in health care. Hastings Cent. Rep., 35: 34-44.

Lagarde, E., G. Pison and C. Enel, 1998. Risk behaviors and AIDS knowledge in a rural community of Senegal: Relationship with sources of AIDS information. Intl. J. Epidemiol., 27: 890-896.

Mason, K.O., 1997. How Family Position Influences Married Women's Autonomy and Power in Five Asian Countries. In: Women and Families: Evaluation of the Status of Women as Factor and Consequences of Changes in Family Dynamics. (Eds. Maria Eugenia Cosio-Zavala) pp: 353-370, CICRED, Paris.

Mayaud, P., G. Ka-Gina and H. Grosskurth, 1998. Effectiveness, impact and cost of syndromic management of sexually transmitted diseases in Tanzania. Intl. J. STD AIDS, 9: 11-14.

Myhre, S.L. and J.A. Flora, 2000. HIV/AIDS communication campaigns: Progress and prospects. J. Health Commun., 5: 29-45.

NIPORT, (National Institute of Population Research and Training, Mitra and Associates, ORC Macro), 2001. Bangladesh Demographic and Health Survey 1999-2000. Dhaka, Bangladesh and Maryland, USA.

Panford, S., M.O. Nyancy, S.O. Amoah and N.G. Aidoo, 2001. Using folk media in HIV/AIDS prevention in rural Ghana. Am. J. Public Health, 91: 1559-1562.

Population Reference Bureau (PRB), 2002. 2002 world population data sheet of the Population Reference Bureau. Washington DC: Demographic Data and Estimates for the countries and regions of the world.

Spear, H.J. and P. Kulbok, 2004. Autonomy and adolescence: A concept analysis. Public Health Nurs., 21: 144-152.

Ward, K., N. Butler, P. Mugabo, J. Klausner and W. McFarland *et al*., 2003. Provision of syndromic treatment of sexually transmitted infections by community pharmacists : A potentially underutilized HIV prevention strategy. Sex Transm. Dis., 30: 609-613.

WHO/ROEM, 2002. Improving health sector response to HIV/AIDS and STD in the countries of the Eastern Mediterranean Region of WHO. Regional Strategic Plan 2003-2005. Cairo: WHO Regional Office for the Mediterranean Region.

Wolffers, I., 1997. Culture, media and HIV/AIDS in Asia. Lancet, 349: 52-54.

Yesudian, P.P., 2004. Impact of women's empowerment, autonomy and attitude on maternal health care utilization in India. Mexico city: Global Forum for Health Research, Forum 8.