URBAN YOUTH IN NEPAL ARE LESS LIKELY TO INTEND FOR ABSTINENCE FROM SEX BEFORE MARRIAGE

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This paper attempts to examine the determining factors on intention for abstinence from sex before marriage among youth (15-24 years) in Nepal among those who have had no sexual experience. The binary logistic regression method using multivariate analysis is employed to determine the factors associated with intention to postpone sexual intercourse until married. Data Files of Nepal Demographic and Health Survey, 2006 is used for this purpose. Associations of some selected socio-economic, demographic and cultural variables along with spatial distribution on intention of youth for abstinence from sex before marriage are examined. The results illustrate that more youth males than females do not intend for abstinence from sex before marriage. Youth living in urban area are less likely than their rural counterparts for abstinence from sex before marriage. The number of household members, some caste/ethnic groups and regions are also observed as determining factors in some extent for abstinence from sex before marriage. But influences of these variables are found limited to either sex only. Thus, it seems that place of residence (rural-urban) is an important determining factor for abstinence from sex before marriage.

BACKGROUND

The word "sex" is commonly acknowledged to mean different things to different people. The same can be said for "abstinence." The varied and potentially conflicting meanings of "abstinence" have significant public health implications now that its promotion has emerged as the primary answer to pregnancy and sexually transmitted infections (STIs) prevention for all people who are not married. For those willing to probe beneath the surface, critical questions abound. What is abstinence in the first place, and what does it mean to use abstinence as a method of pregnancy or disease prevention? What constitutes abstinence "failure," and can abstinence failure rates be measured comparably to failure rates for other contraceptive methods? What specific behaviours are to be abstained from? And what is known about the effectiveness and potential "side effects" of programmes that promote abstinence? Answering questions about what abstinence means at the individual and programmatic levels, and clarifying all of this for policymakers, remains a key challenge (Dailard, 2003).

When used conversationally, most people probably understand abstinence to mean refraining from sexual activity—or, more specifically, vaginal intercourse—for moral or religious reasons. But when it is promoted as a public health strategy to avoid unintended pregnancy or STIs, it takes on a different connotation. So from a scientific perspective, what does it mean to abstain from sex, and how should the "use" of abstinence as a method of pregnancy or disease prevention be measured? Population and public health researchers commonly classify people as contraceptive users if they or their partner are consciously using at least one method to avoid unintended pregnancy or STIs. From a scientific standpoint, a person would be an "abstinence user" if he or she intentionally refrained from sexual activity. Thus, the subgroup of people consciously using abstinence as a method of pregnancy or disease prevention is obviously much smaller than the group of people who are not having sex. The size of the population of

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abstinence users, however, has never been measured, as it has for other methods of contraception.

The definition of an abstinence user also has implications for determining the effectiveness of abstinence as a method of contraception. But common sense suggests that in the real world, abstinence as a contraceptive method can and does fail. People who intend to remain abstinent may "slip" and have sex unexpectedly. Research is beginning to suggest how difficult abstinence can be to use consistently over time. It is not known how frequently abstinence fails in the real world or how effective it is compared with other contraceptive methods. This represents a serious knowledge gap. Oral sex does not eliminate people's risk of HIV and other STIs, and because anal sex can heighten that risk, being technically abstinent may, therefore, still leave people vulnerable to disease (Ibid, 2003).

Abstinence, as the term is used by programme planners and policymakers, is often not clearly defined. Abstinence may be defined in behavioural terms, such as "postponing sex" or "never had vaginal sex," or refraining from further sexual intercourse if sexually experienced, i.e., ever had sexual intercourse. Other sexual behaviours may or may not be considered within the definition of "abstinence," including touching, kissing, mutual masturbation, oral sex, and anal sex. Self-identified "virgins" engage in a variety of non-coital genital activities (Schuster et al., 1996 cited in Santelli et al., 2006). Sexual behaviour among adolescents is often sporadic, and "secondary abstinence" is common. Abstinence, as used in government policies and local programmes, is also frequently defined in moral terms, using language such as "chaste" or "virgin" and framing abstinence as an attitude or a commitment.

Abstinence from sexual intercourse has been described as fully protective against pregnancy and sexually transmitted infections. This is misleading and potentially harmful because it conflates theoretical effectiveness with the actual practice of abstinence. Abstinence is not 100 percent effective in preventing pregnancy or STIs as many teens fail in remaining abstinent. Moreover, some STIs may be spread via other forms of sexual activity, such as kissing or manual or oral stimulation (Santelli et al., 2006).

Although abstinence from sexual intercourse represents a healthy behavioural choice for adolescents, policies or programmes offering "abstinence-only" or "abstinence-until-marriage" as a single option for adolescents are scientifically and ethically flawed. Although abstinence from vaginal and anal intercourse is theoretically fully protective against pregnancy and disease, in actual practice, abstinence-only programmes often fail to prevent these outcomes. Although health care is founded on ethical notions of informed consent and free choice, abstinence-only programmes are inherently coercive, withholding information needed to make informed choices and promoting questionable and inaccurate opinions. It promotes a specific moral viewpoint, not a public health approach. Abstinence-only programmes are inconsistent with commonly accepted notions of human rights. In many communities, abstinence-only education has been replacing comprehensive sexuality education. The programmes censor lifesaving information about prevention of pregnancy, HIV and other STIs, and provide incomplete or misleading misinformation about contraception. Schools and health care providers should encourage abstinence as an important option for adolescents. "Abstinence-only" as a basis for health policy and programmes should be abandoned (Ibid, 2006).

United States has been supporting abstinence-only programme to prevent teen pregnancy since 1981. Over the years, such programmes have grown to include prevention of HIV/AIDS and other sexually transmitted infections (STIs). This trend expanded into the international arena in 2003 earmarking for abstinence-until-marriage programmes. There are no uniform or consistent

definitions of abstinence-only programmes. Currently two approaches predominate: "abstinence-only" (also called "abstinence-only-until-marriage") and "abstinence-plus" (also called "abstinence-based" or "comprehensive sexually education") (AMFAR AIDS Research, 2007).

Abstinence-only programmes emphasize refraining from sexual intercourse until marriage as the safest choice to prevent unintended pregnancy and STIs. The primary objective of abstinence-only programmes is to delay sexual debut (the onset of sexual intercourse) by providing information, changing attitudes about sex, and improving decision-making skills. Abstinence-only programmes adhere to an eight-point definition of "abstinence education," which, among other things, teaches "that a mutually faithful monogamous relationship in the context of marriage is the expected standard of human sexual activity" and that "sexual activity outside of the context of marriage is likely to have harmful psychological and physical effects". These programmes are prohibited from discussing contraception or STI prevention technologies, such as condoms, except in reference to their failure rates (Ibid, 2007). A major criticism of this policy is that abstinence-until-marriage programmes fail to address the fact that, given gender inequities and varying cultural norms about acceptable male and female sexual behaviour, marriage and faithfulness do not necessarily protect women and girls from HIV (UNAIDS, 2006).

In contrast, abstinence-plus programmes strongly encourage abstinence among young people but also provide information about contraception and HIV/STI prevention. In addition to endorsing delay of sexual debut, abstinence-plus programmes aim to increase knowledge, behavioural intentions to remain abstinent, and use of contraception and disease prevention methods among those who do become sexually active.

Ten-year evaluation of abstinence-only-until-marriage programmes found that these programmes had no impact on youth remaining abstinent, age at first intercourse, number of sexual partners, or condom use. The scientific evidence does not support the abstinence-only-until-marriage programmes as the HIV prevention strategy for young people. Rather, to date it suggests that comprehensive sexuality education that includes support for abstinence but also provides risk-reduction information would be a more effective HIV prevention strategy for young people both in the United States and globally (ibid, 2007).

However, some studies reveal that young people are very much affected by the messages on sex and abstinence that they receive in school. There is increasing numbers of young people practicing abstinence today and most teens view abstinence favourably. Abstinence has contributed to the decline in unwed teen birth rates. Practicing abstinence helps couples to avoid the long-lasting negative consequences of premarital sex, including out-of-wedlock childbearing, STIs, emotional problems, promiscuity, and future marital break-up. Religion plays an important role in helping teens to delay premarital sex. In a report by the National Centre for Health Statistics, teens stated that the main reason they had not had sex yet was that it was "against their religion or morals," while substance abuse (drug and alcohol use) and delinquency are associated with premarital sex (Family Research Council, n.d.).

A study in Sub-Saharan Africa concludes that sexual abstinence can also contribute positively to prevention efforts towards teenage pregnancy and thus reduce the negative impact of pregnancy on girls' lives. It can also help reduce the prevalence of STIs among young people that have serious consequences (including infertility), if untreated, and may be incurable (for example, genital herpes). Abstinent rural high school learners are significantly more often females, younger and drink less alcohol. Abstaining girls believe that their friends and parents

think that they should abstain from sex, that their friends abstain from sex and that abstinence helps them to mature emotionally (Dlamini et al., 2008).

"Abstinence," in this study is viewed as intention for abstinence from sexual intercourse before marriage or intention to postpone sexual intercourse until married both either consciously or unconsciously.

DATA AND METHODS

This study uses the Data Files of Nepal Demographic and Health Survey, 2006 in analyzing determining factors for abstinence from sex before marriage among those youth who have had no sexual experience. It was the nationally represented survey carried out using systematic sampling with probability proportional to size to provide estimates of indicators for domains obtained by cross-classifying 3 ecological zones (mountain, hill and Terai) with 5 development regions of Nepal (eastern, central, western, mid-western and far-western). The survey completely interviewed a total of 8,707 households and interviewed 10,793 women aged 15-49 years and in every second household, men aged 15-59 years (4,397) were interviewed. But in this study, only youth (15-24 years) are selected and examined for the purpose of analysis. Furthermore, the study has used weighted data so weighted sample size of the respondents is 6,004 youth (4,431 females and 1,573 males).

Since the binary logistic regression model predicts a dichotomous discrete outcome from a set of independent variables that may be continuous, discrete, categorical, or a mix of any type, it is used in the study for data analysis to find the determining factors on intention of youth for abstinence from sex before marriage. The dependent variable in binary logistic regression can take the value 1 with a probability of event happening, or the value 0 with probability of event not happening. Logistic regression makes no assumption about distribution of independent variables, they do not have to be normally distributed, linearly related or of equal variance within each group. The relationship between dependent and independent variables is not a linear function in logistic regression, instead it has a logit link function which is the logit transformation of θ, i.e. probability of an event. Logistic regression computes the log odds for a particular outcome and the odds of an outcome are given by the ratio of probability of it happening and not happening as $\theta/(1-\theta)$ (Gaur and Gaur, 2008; http://userwww.sfsu.edu/~efc/classes/bio1710/logistic/logisticreg. htm).

Logistic regression equation is:

$$\text{logit}\left[\theta(x)\right] = \log\left[\theta(x)/(1-\theta(x))\right] = \alpha + \beta_1 x_1 + \beta_2 x_2 + \ldots\ldots + \beta_n x_n$$

where $\text{logit}\left[\theta(x)\right] = $ logit of dependent variable;

$\alpha = $ constant of the equation; and

$\beta = $ coefficient of the predictor/independent variables

$x_1, x_2, \ldots\ldots, x_n = $ independent/predictor variables

Logistic regression calculates changes in the log odds of the dependent variable, not change in the dependent itself as ordinary least square regression does. β coefficients associated with explanatory variables are estimators of the change in the logit caused by a unit change in the independent (http://www2.chass.ncsu.edu/garson/pa765/logistic.htm). The outcomes of logistic regression are interpreted in this study with the help of indicators like odds ratio, model χ^2, -2 log likelihood, Cox and Snell R^2, Nagelkerke R^2, and Hosmer and Lemeshow's χ^2 goodness

of fit along with different levels of significance and 95 percent confidence interval as well in the case of odds ratio.

The impact of predictor variables is usually explained in terms of odds ratios since there are some problems in reporting the odds. The odds ratio is the natural log base, e, to the exponent β and it is the predicted change in odds for a unit change in the corresponding independent variable. Odds ratio of less than 1 corresponds to decrease and more than 1 corresponds to increase in odds, and close to 1 indicates no effect on dependent variable. Similarly, model chi-square goodness of fit test tests the null hypothesis that the step is justified from the constant-only model to the all-independents model with level of significance. Likewise, $- 2$ log likelihood is the log transformation of the likelihood function that yields a chi-squared statistic so it can be used for assessing the significance of logistic regression. Likelihood ratio test uses the ratio of the maximized value of the likelihood function for the full model over the maximized value of the likelihood function for the simpler model. The Cox and Snell R^2, and Nagelkerke R^2 are attempts to provide a logistic analogy to R^2, square of multiple correlation coefficient, in ordinary least square regression. Hosmer and Lemeshow's χ^2 goodness of fit test divides subjects into deciles based on predicted probabilities then computes a chi-square from observed and expected frequencies and tests for null hypothesis (Field, 2006; http://www2. chass.ncsu.edu/garson/pa765/logispss.htm).

INTENTION OF YOUTH FOR ABSTINENCE FROM SEX BEFORE MARRIAGE

Characteristics of Youth Respondents not Intending for Abstinence from Sex before Marriage

Seventeen percent of youth males (15-24 years) in Nepal do not intend for abstinence from sex before marriage among those who have not experienced sexual intercourse[1]. The corresponding figure is less than one percent among their female counterparts (not shown in table). But 20 percent of youth females in the country have never heard of HIV/AIDS yet (Shakya, 2010), so along with this, it may be indicative of youth of both sexes being vulnerable in contracting sexually transmitted infections from unsafe sex, including HIV/AIDS.

According to educational status, the proportion of youth males not intending for abstinence from sex before marriage is higher among those who have achieved higher than secondary level of education (24%), whereas the higher proportion intending in the same way among their female counterparts was observed among those who have no education (2%). This may suggest that relatively more youth males with higher level of education could involve in pre-marital sex, while the situation is reverse in the case of youth females. However, there is not found any variation between different categories of currently working status (currently working and not working) and wealth index (poor and non-poor) among youth of the both sexes in this regard.

Similarly, higher proportion of male youth respondents engaged in non-agricultural activities (27%) reported that they do not intend for abstinence from sex before marriage compared to those involved in other activities like manual (11%), not working (15%) and agriculture (16%). The situation is again found reverse in the case of youth females with higher percentage of them involved in manual (2%) saying so. Likewise, 24 percent of urban youth males (15% in rural) and one percent urban youth females (0.3% in rural) are found not intending to do so.

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[1] Data are calculated by the author using weighted data from Data Files of Nepal Demographic and Health Survey, 2006.

This may depict that urban youth are more likely to engage in pre-marital sex and can be infected from sexually transmitted infections including HIV/AIDS compared to their rural counterparts for the both sexes.

The data on mass media show that around 20 percent of youth males who read newspaper/magazine almost everyday or at least once a week do not intend for abstinence from sex before marriage compared to 14 percent of them who read newspaper/magazine less than once a week. But there are no cases among females in the former categories. Likewise, around 18 percent youth males who listen to radio almost everyday or at least once a week intend the same against 10 percent of those who listen to radio less than once a week. But it is just opposite in the case of their female counterparts with higher proportion of them intending in the similar way among those who listen to radio less than once a week. The pattern is similar in the case of watching television also among youth males with around 20 and 13 percent respectively for the corresponding categories, whereas there is no variation among youth females in this regard.

There is not much variation among youth males between age cohorts of 15-19 and 20-24 years who intend for abstinence from sex before marriage. But some variation is observed among youth females of different age cohorts with higher proportion of them intending so in the latter age cohort than the earlier one indicating that more youth females of higher age cohort can involve in sexual relation before marriage compared to the females of lower age cohort.

According to migration status, some 22 percent youth male migrants reported that they do not intend to postpone sexual intercourse until married compared to 15 percent of non-migrants indicating that male youth migrants are more likely to have pre-marital sex and could be more vulnerable in contracting sexually transmitted infections compared to their non-migrant counterparts. But there is not found variation among youth females by migration status in this regard.

As for religious group, higher proportion of Buddhist youth than the followers of rests of the religion are found not intending for abstinence from sex before marriage among both the sexes (23% males and 1% females). Among caste/ethnic groups, only 8 percent youth males of Tharu, Yadav, Ahir and Rajbanshi; and 9 percent of 'other hill origin' ethnic group (besides Brahmin/Chhetri, Janajati and occupational castes) reported that they do not intend for abstinence from sex before marriage, i.e. majority of them intend to postpone sexual intercourse until married compared to youth males of rests of the caste/ethnic groups. While on the other hand, higher proportion of youth females of 'other Terai origin' ethnic group (Muslim and Churaute) (>2%) reported not intending to do so.

The lower proportion of youth males in mountain (12%) and Terai (15%) compared to hill (19%) reported that they do not intend for abstinence from sex before marriage indicating relatively higher percentage of them not believing on pre-marital sex. But the proportion not intending to do so is observed higher among youth females in Terai compared to other ecological zones. Similarly, the proportion of youth males not intending to do so is found higher in mid-western region of Nepal (23%), while it is higher in central region among youth females.

Factors Affecting Intention of Youth for Abstinence from Sex before Marriage

Socio-economic Variables

The multivariate regression data analysis using binary logistic regression model on effects of some selected socio-economic variables on intention of youth for abstinence from sex before marriage is presented in Table 1. Model 1 is the outcomes of multivariate logistic regression controlling for migration status besides other variables listed in the table. The values of odds ratios of selected independent variables with their corresponding significance level are shown in the model for both male and female youth.

Table 1: Effects of some selected socio-economic variables on youth respondents' intention for abstinence from sex before marriage among those who have had no sexual experience, using logistic regression

Socio-economic variables	Model 1 (Female)				Model 1 (Male)			
	Odds ratio	95% CI for OR		Sig.	Odds ratio	95% CI for OR		Sig.
		Lower	Upper			Lower	Upper	
Educational level								
No education	Ref.				Ref.			
Primary	2.696	.130	55.826	.521	.118	.012	1.112	.062
Secondary	.380	.001	151.41	.752	.145	.012	1.701	.124
Higher	-	-	-	-	.136	.009	2.160	.158
Education in single years	1.518	.697	3.308	.293	.990	.853	1.150	.896
Currently working status								
No	Ref.				Ref.			
Yes	-	-	-	-	1.596	.866	2.942	.134
Wealth index								
Poor	Ref.				Ref.			
Non-poor	1.674	.305	9.180	.553	1.190	.754	1.877	.455
Occupation								
Agriculture	Ref.				Ref.			
Not working	-	-	-	-	1.909	.952	3.830	.069
Manual	.282	.028	2.848	.283	1.761	.909	3.413	.094
Non-agriculture	-	-	-	-	.676	.391	1.167	.160
Place of residence								
Rural	Ref.				Ref.			
Urban	.119	.017	.830	.032	.617	.387	.985	.043
Model 1	n = 1,995 Model χ^2 = 20.359; d.f. = 12; sig. = .061 -2 Log likelihood = 83.866 Cox & Snell R^2 = .010; Nagelkerke R^2 = .199 Hosmer & Lemeshow's χ^2 goodness of fit = 4.954; d.f. = 8; p > .05 (sig. = .762)				n = 899 Model χ^2 = 31.939; d.f. = 12; sig. = .001 -2 Log likelihood = 786.561 Cox & Snell R^2 = .035; Nagelkerke R^2 = .058 Hosmer & Lemeshow's χ^2 goodness of fit = 5.884; d.f. = 8; p > .05 (sig. = .660)			

Note: Model 1 is the outcomes of multivariate logistic regression controlling for migration status besides other variables presented in the table.

\- It indicates no case (or relatively small number of cases in one of the binomial values) either in reference or predicted value of dependent variable (i.e. do not intend or intend for abstinence from sex before marriage) in corresponding reference or predicted categories of socio-economic variables.

The model reveals that Nepalese youth living in urban area are less likely than their rural counterparts to intend for abstinence from sex before marriage among both males and females. The odds of male and female youth living in urban are lower by .617 and .119 times the odds of the latter group (reference category) respectively for corresponding sexes who intend for abstinence from sex before marriage. The values of odds ratios for both the sexes are found

significant at level p<.05 along with 95 percent confidence intervals of the odds ratios less than one, i.e. not crossing the value one (Table 1). This implies that it is confident to say that the relationships between the independent and dependent variables found in the sample are stable and true for population as well.

But rests of the selected socio-economic variables are not found as determining factors among youth for explaining the variations on intention for abstinence from sex before marriage. The values of odds ratios for different categories of rests of the socio-economic variables with respect to their corresponding reference categories are not found significant at p<.05 level (Table 1). Thus, the results obtained from multivariate regressions analyses show that place of residence (rural and urban) is the most important determining variable for variation on intention of youth for abstinence from sex before marriage even after controlling the effects of other variables like educational level, single years of education, currently working status, wealth status, occupation and migration status.

The relatively larger value of -2 log likelihood in Model 1 indicates that there are some unexplained observations in the model for males compared to females. It is reduced to that level by the value of model χ^2 from the baseline model and the improvement in the model shown by model χ^2 value is found justified with significance level at p=.001. However, the model χ^2 value for youth females is not found significant at p<.05 level. Likewise, Cox and Snell R^2, and Nagelkerke R^2 values are found explaining only 3.5 and 5.8 percent of the variance in the dependent variable respectively in the model for male youth, whereas the corresponding figures for female youth are one and 19.9 percent respectively. Similarly, the non-significant values (at p>.05) of Hosmer and Lemeshow's χ^2 goodness of fit for both the sexes indicate that predicted values in the model do not differ significantly from the observed data.

If one analyzes the effects of selected socio-economic variables individually, i.e. not controlling the effects of any other independent variables on dependent variable, then it would be found that some other socio-economic variables are also statistically significant at different levels of p<.05 and p<.01. For example, youth males having primary level and higher than secondary level of education are less likely for abstinence from sex before marriage compared to those without education (not shown in table). Similarly, youth males with unit increase in years of education and engaged in non-agricultural activities are less likely than those with unit decline in years of education and engaged in agriculture respectively to postpone sexual intercourse until married. However in the case of youth females, results are found the other way round. Those having secondary level of education and with unit increase in years of education are more like to postpone sexual intercourse until married compared to those without education and with unit decline in years of education respectively. But these relationships are not well established since they are not found statistically significant while controlling the effects of other independent variables on dependent variable.

The effects of mass media added to the socio-economic variables listed in Model 1 using block entry model is presented in Model 2 in Table 2. The results in Model 2 are almost similar to those in Model 1 with only slight changes in the values of odds ratios in the category of place of residence, urban. In Model 1 it was found that youth living in urban area are less likely for abstinence from sex before marriage along with statistically significant values of odds ratios. But Model 2 shows the significant odds ratio at p<.05 only for youth females with odds of urban youth females being .096 times lower than the odds of their rural counterparts who intend to do so. The 95 percent confidence interval of odds ratio also does not cross the value one.

Table 2: Effects of mass media added to socio-economic variables on youth respondents' intention for abstinence from sex before marriage among those who have had no sexual experience, using logistic regression

Variables	Model 2 (Female)				Model 2 (Male)			
	Odds ratio	95% CI for OR		Sig.	Odds ratio	95% CI for OR		Sig.
		Lower	Upper			Lower	Upper	
Socio-economic variables								
Educational level								
No education	Ref.				Ref.			
Primary	2.736	.105	71.072	.545	.126	.013	1.199	.072
Secondary	.454	.001	251.67	.806	.147	.012	1.760	.130
Higher	-	-	-	-	.127	.008	2.053	.146
Education in single years	1.438	.630	3.283	.389	1.019	.871	1.193	.811
Currently working status								
No	Ref.				Ref.			
Yes	-	-	-	-	1.632	.881	3.024	.120
Wealth index								
Poor	Ref.				Ref.			
Non-poor	1.598	.251	10.187	.620	1.379	.839	2.264	.205
Occupation								
Agriculture	Ref.				Ref.			
Not working	-	-	-	-	1.935	.955	3.921	.067
Manual	.271	.026	2.840	.276	1.882	.959	3.696	.066
Non-agriculture	-	-	-	-	.701	.401	1.226	.213
Place of residence								
Rural	Ref.				Ref.			
Urban	.096	.013	.704	.021	.641	.399	1.032	.067
Mass media								
Frequency of reading news paper/magazine								
Less than once a week	Ref.				Ref.			
At least once a week	4.701	.049	451.80	.506	.754	.466	1.219	.249
Almost every day	1.362	.019	97.881	.887	1.148	.594	2.218	.681
Frequency of listening to radio								
Less than once a week	Ref.				Ref.			
At least once a week	2.112	.248	17.952	.494	.651	.342	1.240	.191
Almost every day	1.046	.170	6.427	.961	.654	.364	1.175	.155
Frequency of watching television								
Less than once a week	Ref.				Ref.			
At least once a week	1.301	.129	13.163	.824	.687	.414	1.140	.146
Almost every day	1.294	.114	14.627	.835	.701	.424	1.159	.166

Model 2	n = 1,994 Block χ^2 = 1.394; df = 6; sig. = .966 Model χ^2 = 21.752; df = 18; sig. = .243 -2 Log likelihood = 82.473 R^2_{CS} = .011 and R^2_N = .213 H & L's χ^2 = 4.207; df = 8; sig. = .838	n = 898 Block χ^2 = 9.020; df = 6; sig. = .172 Model χ^2 = 40.959; df = 18; sig. =.002 -2 Log likelihood = 777.541 R^2_{CS} = .045 and R^2_N = .075 H & L's χ^2 = 13.693; df = 8; sig. =.090

Notes: Model 2 is the results of logistic regression when block entry of mass media variables are added to Model 1.

df = degree of freedom; R^2_{CS} = Cox and Snell R^2; and R^2_N = Nagelkerke R^2.

H & L's χ^2 = Hosmer and Lemeshow's χ^2 goodness of fit.

- It indicates no case (or relatively small number of cases in one of the binomial values) either in reference or predicted value of dependent variable (i.e. do not intend or intend for abstinence from sex before marriage) in corresponding reference or predicted categories of socio-economic variables.

The added block entry variables of mass media like frequency of reading newspaper/magazine, listening to radio and watching television are also observed not significant enough to have impact on youth's intention for abstinence from sex before marriage (Table 2).

The value of -2 log likelihood in Model 1 is further reduced by block χ^2 value in Model 2. But the improvement in Model 2 shown by block χ^2 value along with model χ^2 value is found justified with significance level at p<.01 only for youth males. Cox and Snell R^2, and Nagelkerke R^2 values are found explaining more percentage of the variance in the dependent variable for both the sexes in this model. The insignificant values (p>.05) of Hosmer and Lemeshow's χ^2 goodness of fit also suggest that predicted values in Model 2 do not differ significantly from the observed data.

Demographic Variables

The results of multivariate regression analysis of some selected demographic variables regressed with dependent variable, i.e. intention of youth for abstinence from sex before marriage, are shown in Table 3. Model 3 is the multivariate logistic regression controlling the effects of educational level, wealth index, occupation and place of residence besides other variables presented in the table. The data in Table 3 reveals that none of the demographic variables, except number of household members for youth females, are significant enough to influence youth's intention for abstinence from sex before marriage. The values of odd ratios for demographic variables like age group, number of household members, number of women (15-49 years), number of men (15-59 years) and migration status are not found significant at p<.05 level for youth of both sexes, except odds ratio of number of household members in case of youth females.

Table 3: Effects of demographic variables on youth respondents' intention for abstinence from sex before marriage among those who have had no sexual experience, using logistic regression

Demographic variables	Model 3 (Female)				Model 3 (Male)			
	Odds ratio	95% CI for OR		Sig.	Odds ratio	95% CI for OR		Sig.
		Lower	Upper			Lower	Upper	
Age group (in years)								
15-19	Ref.				Ref.			
20-24	.346	.071	1.674	.187	1.156	.717	1.865	.551
No. of HH members	.698	.527	.924	.012	1.047	.970	1.129	.238
No. of women (15-49 years)	2.787	.945	8.223	.063	na	na	na	na
No. of men (15-59 years)	na	na	na	na	1.231	.967	1.566	.091
Migration status								
Non-migrant	Ref.				Ref.			
Migrant	.553	.078	3.937	.554	.834	.528	1.317	.437
Visitor	-	-	-	-	.735	.241	2.243	.589
Model 3	n = 1,995 Model χ^2 = 24.434; d.f. = 13; sig. = .027 -2 Log likelihood = 79.791 Cox & Snell R^2 = .012; Nagelkerke R^2 = .239 Hosmer & Lemeshow's χ^2 goodness of fit = 4.886; d.f. = 8; p > .05 (sig. = .770)				n = 899 Model χ^2 = 40.503; d.f. = 13; sig. = .000 -2 Log likelihood = 777.996 Cox & Snell R^2 = .044; Nagelkerke R^2 = .074 Hosmer & Lemeshow's χ^2 goodness of fit = 13.939; d.f. = 8; p > .05 (sig. = .083)			

Note: Model 3 is the outcomes of multivariate logistic regression controlling for educational level, wealth index, occupation and place of residence besides other variables presented in the table.

na: Not applicable.

-       It indicates no case in reference value of dependent variable (i.e. do not intend for abstinence from sex before marriage) in corresponding predicted category of demographic variable.

The odds of number of household members are 0.698 times lower than the odds of unit decline in member of household for youth females (Table 3) depicting less likely for abstinence from sex before marriage as there is unit increase in their household members. The value is significant at $p<.05$ level and its 95 percent confidence interval also does not cross the value one indicating that relationship between independent and dependent variables found in the sample is stable and resembles that of population as well. Rests of the selected demographic variables are not found significant in determining intention for abstinence from sex before marriage among those youth who have had no sexual experience.

In this model also the value of -2 log likelihood is justified with improvement shown by model χ^2 value with significant at $p<.001$ and $p<.05$ levels for youth males and females respectively. Cox and Snell R^2, and Nagelkerke R^2 values explained only 4.4 and 7.4 percent of the variance respectively in the dependent variable for youth males, while the corresponding figures for youth females are 1.2 and 23.9 percent respectively. The insignificant values ($p>.05$) of Hosmer and Lemeshow's χ^2 goodness of fit for youth of both sexes also indicate that predicted values in Model 3 do not differ significantly from the observed data.

Like in the previous case, if one would see the results of individual demographic variables affecting the dependent variable not controlling for the effects of any other independent variables, then number of household members, number of men (15-59 years) and migration would be found as influencing factors on intention of youth males for abstinence from sex before marriage at significance levels of $p=.001$ for the former two variables and $p<.05$ for the latter (not shown in table). The youth males with unit increase in their household members and number of men are more likely to intend for abstinence from sex before marriage compared to them with unit decline in their household members and number of men (15-59 years). But male youth migrants are found less likely to do so in comparison to their non-migrant counterparts. But these relationships are not well established since they are not found statistically significant while controlling the effects of other independent variables on dependent variable.

Cultural Variables and Spatial Distribution

Results of multivariate logistic regression between some selected cultural variables, spatial distribution and dependent variable, i.e. intention for abstinence from sex before marriage among youth are shown in Table 4 using Model 4. The model controls the effects of educational level, wealth index, occupation, place of residence, and migration status besides other variables presented in the table to determine the factors responsible for variation in the dependent variable. The data show that none of the selected cultural independent variables and spatial distribution are significant enough to determine youth females' intention for abstinence from sex before marriage.

The religion is not found as determining factor to have impact on intention to do so for youth males as well. But youth males of Terai castes like Tharu, Yadav, Ahir and Rajbanshi are found more likely for abstinence from sex before marriage compared to Brahmin/Chhetri, since the odds of former caste/ethnic group is 2.59 times higher than the odds of latter group and it is significant also at level of $p<.05$ along with the 95 percent of confidence interval of odds ratio being greater than one but not crossing the value one (Table 4). However, there is not observed significant variation on intention for abstinence from sex before marriage among youth males of rests of the caste/ethnic group when compared with reference category of Brahmin/Chhetri.

Table 4: Effects of cultural variables and spatial distribution on youth respondents' intention for abstinence from sex before marriage among those who have no sexual experience, using logistic regression

Variables	Model 4 (Female)				Model 4 (Male)			
	Odds ratio	95% CI for OR		Sig.	Odds ratio	95% CI for OR		Sig.
		Lower	Upper			Lower	Upper	
Religion								
Hindu	Ref.				Ref.			
Bouddha	.522	.034	7.971	.640	.565	.260	1.227	.149
Others±	-	-	-	-	1.906	.818	4.441	.135
Caste/ethnicity								
Brahmin/Chhetri	Ref.				Ref.			
Janajati†	-	-	-	-	.962	.546	1.694	.893
Occupational caste	-	-	-	-	.886	.440	1.785	.735
Other Hill origin	-	-	-	-	1.481	.582	3.766	.409
Tharu & Yadav‡	-	-	-	-	2.590	1.188	5.647	.017
Other Terai origin	-	-	-	-	.656	.331	1.300	.227
Ecological zone								
Hill	Ref.				Ref.			
Mountain	-	-	-	-	1.824	.724	4.594	.203
Terai	.520	.047	5.769	.595	1.128	.712	1.787	.609
Region								
Central	Ref.				Ref.			
Eastern	2.273	.306	16.876	.422	.673	.379	1.195	.176
Western	1.458	.116	18.364	.771	.602	.340	1.065	.081
Mid-western	-	-	-	-	.444	.224	.879	.020
Far-western	1.284	.047	34.919	.882	.445	.217	.915	.028
Model 4	n = 1,995 Model χ^2 = 34.327; d.f. = 23; sig. = .061 -2 Log likelihood = 69.898 Cox & Snell R^2 = .017; Nagelkerke R^2 = .335 Hosmer & Lemeshow's χ^2 goodness of fit = 4.249; d.f. = 8; p > .05 (sig. = .834)				n = 899 Model χ^2 = 53.482; d.f. = 23; sig. = .000 -2 Log likelihood = 765.018 Cox & Snell R^2 = .058; Nagelkerke R^2 = .097 Hosmer & Lemeshow's χ^2 goodness of fit = 9.647; d.f. = 8; p > .05 (sig. = .291)			

Notes: Model 4 is the outcomes of multivariate logistic regression controlling for educational level, wealth index, occupation, place of residence and migration status besides other variables presented in the table.

±   Includes Muslim, Kirat, Christian and other.

†   Includes Newar, Gurung, Magar, Tamang, Sherpa, Rai and Limbu.

‡   Also includes Ahir and Rajbanshi.

-        It indicates no case in reference value of dependent variable (i.e. do not intend for abstinence from sex before marriage) in corresponding reference or predicted categories of cultural variables and spatial distribution.

As for spatial distribution, ecological zones (mountain, hill and Terai) are also not found as determining factor for variation on intention for abstinence from sex before marriage among youth males as well. But youth males living in the mid- and far-western regions of Nepal appear less likely for abstinence from sex before marriage compared to their counterparts living in the central region. The odds of former two categories are .444 and .445 times lower respectively than the odds of latter (reference) category with level of significance at p<.05 and the 95 percent confidence intervals of their odds ratios not crossing the value one in both the categories. This confines the established relationship between the specified categories of independent variables and dependent variable.

The improvement in Model 4 compared to baseline model in -2 log likelihood shown by model χ^2 value is also found significant at p<.001 level for youth males. Cox and Snell R^2, and Nagelkerke R^2 values explained 5.8 and 9.7 percent of the variance respectively in the

dependent variable in the model; and the non-significant value (p>.05) of Hosmer and Lemeshow's χ^2 goodness of fit also indicates predicted values in the model not differing significantly from the observed data.

In this case also, if selected cultural variables and spatial distribution are regressed individually with dependent variable not controlling for effects of any other independent variables, youth males of 'other hill origin' apart from Brahmin/Chhetri, Janajati and occupation castes would also be found as more likely for abstinence from sex before marriage with statistically significant. But it is not well established since multivariate regression analysis does not support this.

CONCLUSION

More youth males than females are vulnerable in contracting sexually transmitted infections from unsafe sex, including HIV/AIDS since relatively higher percentage of youth males in Nepal do not intend for abstinence from sex before marriage compared to their female counterparts among those who have had no sexual experience. About one-fourth of youth males each with higher level of education, engaged in non-agricultural activities, living in urban area, migrants, followers of Bouddha religion and living in the mid-western region respectively do not intend for abstinence from sex before marriage. Likewise, about one-fifth of each of them livening in hill zone and caste/ethnic groups of Brahmin/Chhetri, Janajati and occupational castes intend in the similar way. It may indicate that they could involve in pre-marital sex and be infected from sexually transmitted infections including HIV/AIDS.

The outcomes of multivariate logistic regression controlling effects of educational level, single years of education, currently working status, wealth index, occupation and migration status show that Nepalese youth living in urban area are less likely than their rural counterparts to intend for abstinence from sex before marriage among both males and females (OR=.617 at p<.05 for males OR=.119 at p<.05 for females) among those who have had no sexual experience. But rests of the selected socio-economic variables are not found as determining factors for explaining the variations on intention to postpone sexual intercourse until married.

When the effects of educational level, wealth index, occupation, rural-urban residence, age group, migration, and number of household members, women (15-49 years) and men (15-59 years) are controlled, none of the demographic variables except number of household members and that too for youth females only, are found significant enough to influence their intention for abstinence from sex before marriage. It is less likely for them to postpone sexual intercourse until married as there is unit increase in their household members (OR=.698 at p<.05).

Similarly, after controlling the effects of educational level, wealth index, occupation, rural-urban residence, migration, religion, caste/ethnic group, ecological zones and development region, none of the selected cultural variables and spatial distribution are significant enough to determine youth females' intention for abstinence from sex before marriage. But youth males of Terai castes like Tharu, Yadav, Ahir and Rajbanshi are found more likely for abstinence from sex before marriage compared to Brahmin/Chhetri (OR= 2.59 at p<.05); and those living in the mid- and far-western regions appear less likely for abstinence from sex before marriage compared to their counterparts living in the central region (OR=.444 and .445 respectively at p<.05).

The analyses of data show that place of residence (rural-urban), number of household members, Terai caste like Tharu, Yadav, Ahir and Rajbanshi, and the mid- and far-western region of Nepal

are some determining variables that influence youth's intention on whether to postpone sexual intercourse until married or not. Specifically, place of residence (rural-urban) is the most important determining variable in this regard, since impacts of other variables on dependent variable are found limited to either sex only and with lower extent. Thus, it can be said that youth living in urban area of Nepal do not intend for abstinence from sex before marriage compared to their rural counterparts.

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