LOGIT ANALYSIS OF VIOLENCE AGAINST WOMEN IN MARGINALIZED COMMUNITIES, EASTERN TARAI REGION OF NEPAL

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ABSTRACT

Violence against women is the foremost concern of local- international communities at present. Despite formulating several legal provisions, laws, acts and rules, various forms of violence as physical, sexual and psychological were yet not reduced substantially from parochial value based society. Such violence reduction strategy must be based on proper understanding about responsible factors and their nature, intensity and strength. Thus, it is desirable to identify each individual factor/cause and measure their strengths and make prediction so that they would signify some guidelines for formulation of eradication strategy and welfare development program. With this in mind, present paper examines nineteen individual variables associated with demographic, economic and socio-cultural, based on hundred households sampled from study area. Maximum likelihood logit analysis tool was used. Difference at age of marriage, size of cultivated land, occupation of husband and wife, food sufficiency, economic dependency of female, educational status of woman, and marriage frequency of a husband were identified as determining factors contributing to the incidence of violence. Amongst, illiteracy, economic dependency, food deficiency and primary occupation of husband are identified as prime determinants based on measured strength in descending order respectively. The study shows the husbands of illiterate women involve in remarriage and such illiterate women suffer the incidence of violence.

The following are ensuring education, providing income-generative employment, making food sufficiency, re-orientation of husband for women's right, main streaming of single woman, awareness of employment providers, strengthening foreign migration policy recommendations for eliminating the violence against women.

INTRODUCTION

Women of Nepal that comprise 50.1% (CBS 2004) of the total population have been discriminated since time immemorial in all sectors of national life due to mainly patriarchal value system, cultural practices and non-supporting legal provisions. Such discrimination caused "Violence Against Women (VAW)" squarely within the discourse of human rights, affirming that women are entitled to equal enjoyment and protection of their human rights and fundamental freedoms. The magnitude of the violence against women could not be adequately ascertained owing to the "culture of silence" and social stigma attached to it but it exists in many forms such as domestic violence, rape, sexual

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assault, prostitution, trafficking and pornography representing symptom of an unjust society, a society unsafe for women (UNDP/NP 2004).

Even though Nepal is a party to 16 International Human Rights Instruments (FWLD 2000) but all are confined to areas of political participation and maternity benefits rather than measures to eliminate Violence Against Women (VAW) UNDP/NPC 2004). Although, home is a safe haven for individuals, but all over the world, crimes of terror and violence and even death at the hands of family members who are supposed to love and protect them are very common (Pradhananga and Shrestha 2001).

The most common form of violence against Tarai women is the violence based on superstitions such as torture for alleged witchcraft, sexual harassment, domestic violence, polygamy, child marriage and dowry related violence. Domestic violence against women in Tarai Community (VAWTC) has been found in varying degree depending upon the caste, class and socio-economic conditions. The major cause of violence is spousal conflict and alcoholism of husbands and male members and economic deprivation. This is a serious impediment particular to Tarai women's advancement of community welfare and capability enhancement for the establishment equitable society in Tarai region. In view of this, this study aims to identify socio-economic, cultural and demographic factors that influence the incidence of violence against women, specifically in marginalized Tarai community as essential for formulating women's development policy and programs regarding the exploitation and mainstreaming.

METHODOLOGY

SAMPLING

The study area is Aurahi VDC of Saptari district. Systematic random sampling was used to select 100 respondents/women out of a total of 612 households in this VDC. Samples represent all social groups such as higher caste, Adibashi-Janjati, Tarai middle class (between Brahmin/Chetri and Dalit/Janjati), Dalit and Muslim. Interview was made with the rural women/housewife particularly responsible after their husband/son. It has been estimated that only 20.0 percent of the violence occurred in different localities of Saptari district has been possible to be exposed to a local newspaper for publicizing the events and remaining 80.0 percent has been left. It is *sensitive issue* for the society and also *Culture of Silence* on the other (Mandal 2008).

LOGIT ANALYSIS

Relationship between socio-economic and demographic variables and the incidence of women violence was examined by the use of frequently tables and logit analysis. For the logit analysis, the dependent variable (incidence of violence against women) was assigned 1 or 0 value; 1 for those who suffered from violence and 0 for those who have not suffered.

The true probability function, expressed as a cumulative distribution function, is generally assumed to have an S or sigmoid shape as it must lie between 0 and 1, must be non-decreasing if the probability of the dependent variable being equal to 1, increases with larger values of the explanatory variables. This is illustrated in Figure 1.

Generalized least squares (GLS) has been suggested as one way to overcome the problem of heteroscedasticty (Goldberger 1964 cited in Malla 1983), but with this method the predicted value of the dependent variable may still be greater than 1 or less than 0. To overcome this problem in analyzing binary data, Nerlove and Press (1973) and Wrigley (1976) suggest the use of maximum likelihood logit analysis. The logistic regression function can be written as in Equation 1.

Figure 1: Linear Approximation of a Probability Function
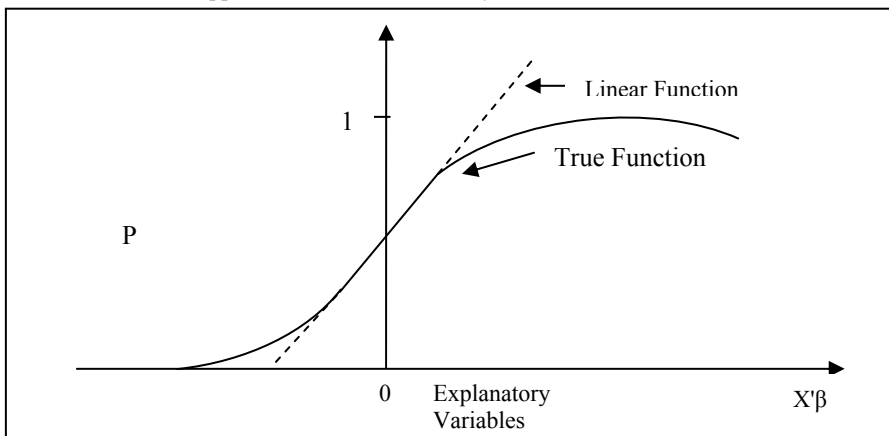
Source: Nerlove and Press, 1973.

$$P(y/x) = \frac{e^{\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots \beta_i X_i}}{1 + e^{\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots \beta_1 X_1}} \dots\dots\dots \dots\dots\dots \dots\dots Equation \quad 1$$

The Logistic function in terms of the log of the odds called as logit, can be written as in Equation 2.

$$In\left(\frac{P_i}{1 - P_i}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_i X_i \dots\dots\dots \dots Equation \quad 2$$

Where, P_i = Probability that a woman will suffer from the incidence of violence
  β_i = Column vector of regression coefficients

  X_i = Column vector of independent variables

The left-hand side of the second equation is known as log odds or logit of violence against woman suffering. The computational procedure involves the

maximization of the likelihood function with respect to the coefficients of the independent variables.

The model used in this study is summarized by the following Equation 3:

$$Y = f(X_1, X_2 \ldots\ldots \ldots X_{19}) \ldots\ldots \ldots\ldots \ldots\ldots \ldots \text{Equation} \quad 3$$

Where, Y = A woman suffers from event of violence representing any form and types of particularly psychological, physical and traditional (Yes or No).

Table 1. Model specification

Model I	Demographic variables
Model II	Demographic and Economic variables
Model III	Demographic, Economic and Socio-cultural variables

Male and female variables and male member variable and marriage frequency of a woman dummy variable and number of wives dummy variable were subsequently dropped from the equation because there was the problem of multi-colinearity. The amount of expenditure spent in marriage of daughter and cultivated land and dowry given would be hypothesized as negatively related to incidence of violence against women and all other variables as positive. The description of variables used in this study is given in Appendix 1.

The hierarchical regression models have been run by deciding the hierarchy of demographic, economic and socio-cultural variables entered into three models: Model I, Model II and Model II respectively mentioned in Table 1. This is sought in order to see the effects of inclusion of successive group of variables in the model whether it significantly improves the explanation of event of violence against women or not. Applicability of the model or how model fits the various characteristics was assessed by comparing the predicted and observed results in Classification Accuracy Table.

RESULTS AND DISCUSSIONS

Women in the sample of study area suffered from different types of violence such as psychological, physical and traditional in nature. Psychological violence includes verbal abuse, mental torture, force to commit suicide etc. Similarly physical violence characterized as wife beating, force to divorce and force to leave husband's house. Polygamy is practiced relatively more in Tarai because of given high preference to son birth without any medical treatment of infecund wife. It occurs mainly where landless households are more and economic condition is very miserable. Altogether 78 out of the 100 sample women suffered from violence, more than 50 percent of the psychological violence covers verbal abuse and 45 percent of the physical violence consists of wife beating and 52.7 percent of the traditional violence shares polygamy (Mandal 2008).

SOCIO-ECONOMIC AND DEMOGRAPHIC CHARACTERISTICS OF VIOLENCE SUFFERER AND NON-SUFFERER WOMEN

Table 2 shows the frequency of sufferer and non-sufferer women according to different categories of qualitative variables. The pattern or structure of frequencies indicates those women, who suffered from violence as compared to non-suffer, having larger number in all indicator variables.

Almost all women whose husbands remarried are illiterate (28), 74 out of 91 and 12 out of 15 single woman suffered from violence (Table 2).

Table 2, Quantitative characteristics of violence against women, sufferers and non-sufferers

	Characteristics	Non-Sufferer *f= 22*	Sufferer *f=78*	Total, n=100
1.	Nonmigrant households	11	51	62
	Magrant households	11	27	38
2.	Non-farming (husband)	13	51	64
	Farming	0	27	36
3.	Non-whole year food deficit	11	12	23
	Whole year	11	66	77
4.	Non-dowry giver	16	63	79
	Dowry givers	6	15	21
5.	Non-household involved (wife)	5	40	45
	Household work	17	38	55
6.	Economic independent of female	16	31	47
	Economic dependent of female	6	47	53
7.	Non-single women	19	66	85
	Single women	3	12	15
8.	Literate women	5	4	9
	Illiterate women	17	74	91
9.	Non-first marriage of male	3	28	31
	First marriage of male	19	50	69
10.	Non-first marriage of female	1	5	6
	First marriage of female	21	73	94
11.	Non-polygamy	22	50	72
	Polygamy	0	28	28
	Total:	**22**	**78**	**100**

Source: Field Survey, 2007.

The Chi-square value under Omnibus Test of Model Coefficients (3.44) clearly indicates that Model 1 represents only demographic variables is not significant. The increment of Chi-square values from 28.69 for Model II to 63.11 for Model III indicate the significance of these models: II and III. This implies the fact that the inclusion of variables in respective equations improves the models' fit. Thus all demographic, economic and socio-cultural independent variables include Model III are sufficient to discuss and analyze shown in Table 4 by omitting Model I and II to discuss.

The logit output shown in Table 4 is furnished by Beta coefficients, and its standard error, Wald statistics, significance level and Exp (B) (e raised to power B). The demographic variables included in the model-III shown in Table 4 have shown negative signs. It implies that a family of smaller size in contrast of large has higher risk of suffering from violence. It is significant factor in affecting the violence against women. As difference age at marriage of couple increases; the probability of suffering violence also increases implying that similar age of couple is likely to suffer less domestic violence.

Model-III consisting of demographic, economic and socio-cultural variables as mentioned in Table 4 are significant in explaining the incidence of violence against women. Size of land holding as major source of livelihood in Tarai region is found as significant factor. With the increase in the size of landholdings the probability of incidence of violence against women is decreased.

Table 3. Quantitative characteristics of violence against women sufferers and non-sufferers

Characteristics	Sufferer f= 78		Non-Sufferer f=22		Total, n=100	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Family size	6.49	2.33	6.77	1.82	6.55	2.23
Age of Woman	40.52	13.78	40.04	12.60	40.42	13.47
Age at marriage of husband	17.97	5.49	20.18	8.63	18.46	6.33
Age at marriage of wife	12.85	4.04	13.91	5.21	13.08	4.32
Difference between age at marriage of male and female	5.13	3.59	5.27	4.65	5.38	3.85
Male members in a family	3.17	1.51	3.45	1.33	3.23	1.47
Cultivated land (in bigha)	0.91	0.98	1.68	1.36	1.11	1.13
Expenditure in marriage (Rs. 000)	33.66	63.36	39.37	61.27	34.92	62.64
Cash in dowry (Rs. 000)	50.53	63.61	71.67	35.31	56.57	56.92

Source: Field Survey, 2007.

The fact of average land holding (Table 3.0). shows that the domestic violence against woman may have the matter of economic resource constraint and can be reduced by providing sources of family income generation including cultivated land to those poor and hardcore poor landless people with equitable

distribution. It has also been evident by the fact that share of landless people is remarkably high, 30.8 percent in Tarai region as compared to Hill 20.6 percent, High Mountain, 7.5 percent and country as whole, 24.4 percent (CSRC 2003).

Usually husband employed in agricultural activities is found as one of major perpetrators of domestic violence as compared to other types of occupation. It does not mean that the agriculture as the lifeline of Tarai communities has positive impacts to increase the violence against women. Owing to low agriculture productivity, unable to serve communities' needs, women violence is widely spread in those agriculture-based households. It further implies that providing production input services along with off-farm activities should rather be regarded as the factor to reduce the risk of violence in those land holding families by increasing their income levels of family to support daily basic needs. Even though, heavy investment in daughter's marriage both as dowry particularly cash given to bridegroom's father and other marriage formalities including bridesmaid's ornaments, decoration and guests reception to insignificant, but these don't show the negative signs so their role could not be denied to reduce the incidence of violence. The positive association of both factors and violence event should not be understood as affirmative of the economic factor hypothesis. It shows that high investment in daughter's marriage including dowry does not serve as an index of economic factor as a social prestige attached to a particular caste. As the sign of the food deficiency's coefficient is positive, it appears that a family having food deficiency is likely to suffer the incidence of violence. It implies that domestic violence against women has been occurred due to unavailability of sufficient food as a basic human need in the family.

Table 4. Logit analysis of violence against women

Explanatory Variables	B	S.E.	Wald	Sig.	Exp(B)
Family size	-.048	.157	.093	.761	.953
Age of woman	-.017	.026	.419	.517	.984
Remittances/pensions household	-.080	.666	.015	.904	.923
Difference at age of marriage in couple	-.108	.093	1.349	.045	.898
Size of cultivated land of a family	-.561	.430	1.702	.052	.571
Occupation of husband	.926	.844	1.205	.053	2.525
Amount of expenditure in a marriage of female	.011	.041	.072	.789	1.011
Food deficiency of a family	.930	.962	.936	.051	2.536
Dowry for marriage of a female	.381	1.009	.143	.706	1.464
Occupation of wife	-1.385	.788	3.092	.029	.250
Economic dependency of female	1.737	.754	5.304	.001	5.681
Marital status of woman	-.029	.936	.001	.975	.971
Educational status of woman	2.257	1.096	4.244	.009	9.554
Marriage frequency of a husband	-2.058	1.180	3.042	.001	.128
Constant	2.030	1.987	1.044	.057	7.616

Source: Field Survey, 2007.

Women's own occupation as represented by household chores inside the family had negative sign and it significantly indicates that women involved in their own household work are less likely to suffer from the incidence of violence than those who work outside as wage laborer in agriculture or industry. It is because of the employer's monopolistic behavior, unclear of wage rate, working duration and nature of work. It indicates that women don't only suffer from the family members but also from the employers who hire the poor community women to perform their works. Women working outsides such as in brick industry, rice mills and so on as wage labor are not safe.

Even though the coefficient is insignificant. Singularity of women had negative marginal effects in occurrence of violence against them. Single women mainly suffering of violence, is the widely accepted conception and perception all over the country. Based on such perception, the negative sign is hardly accepted and much explanation could not be given for unexpected sign because it cannot be considered as opposing the *cultural factor hypothesis.* But in support of negative relationship, it could also be stated that single women are less likely to suffer from the events as compared to non-singular. It is because of the fact that in single woman family, husband perceived as one of major perpetrators of domestic violence is absent. That is why pleaders of single woman and their organizations are strongly against to recently re-marriage package of single woman forwarded by the existing Government in the country.

Literacy has been found as a prominent significant factor in reducing the probability of incidence of violence against women. As the coefficient of educational status of women is the highest, it shows that an illiterate woman is more prone to suffering of violence.

Table 5. Comparison between observed and predicted outcomes

Observed (n = 100)	Predicted (n = 100)		
	Sufferers		% Correct
	No	Yes	
Sufferers	No	15	7	68.2
	Yes	2	76	97.4
Overall Percentage			**91.0**

Source: Field Survey, 2007.

The marriage frequency of husband is also proved to be a significant factor determining the decline of the probability of suffering of the violence against woman. Marriage only one time of husband has reduced the incidence of violence against women. Except first, there is vulnerable situation of women to suffer because if first wife is lost due to any reason, the psychological situation of male is rather deteriorated and there is less probability to behave in good manner with his second wife.

PREDICTION AND APPLICABILITY

Table 5 with the estimated probability cut off point, 0.5 depicted that 15 women who do not suffer are correctly predicted by the model not to suffering from incidence of violence. Similarly, 76 women suffering from violent events are correctly predicted as violence sufferers. The off-diagonal values representing a total of 9 women are misclassified in the present case consisting of 2 sufferers and 7 non-sufferers. Of the non-sufferer women, 68.2% are correctly classified.

Of the sufferer women, 97.4% are correctly classified. Overall 91.0% of the 100 sample women are correctly classified. The distribution of estimated probabilities among different nature of women characteristics have been shown in Table 6. Illiterate women whose husbands are not first in terms of marriage frequency are seemed most likely to suffer incidence of violence as compared to other characteristics. If the educational status of women changes from illiterate to literate, the probability of suffering decreased from 0.9864 to 0.8839 and thus their odd ratios of suffering and non-suffering expressed as P/(1-P) from 7.61 to 72.53 and subsequently odds are increased by a factor of 9.55 as shown highest in the Exp (B) column in Table 4.

By decreasing the value of educational status from 1 to 0 (illiterate to literate), the odds changed from 72.53 to 7.61, that is, the probability of woman suffering from violence will be decreased by a factor of 9.55. Similarly lowest probability (0.4930) of suffering has been observed in reverse case of aforementioned characteristics of women. Likewise another significant factors, economic dependency and food deficiency of women in contrast of independency and sufficiency would lead to increase the odds by a factor of 5.68 and 2.53 (Table 4).

Table 6. Predicted Probability of Sufferer and Non-sufferer Women from Violence

	Women's characteristics		Probability
1	Labor-migrant households	food deficit throughout the year	0.9468
		food sufficient	0.8754
	Non-migrant households	Food deficit throughout the year	0.9507
2	Economic dependency of female	Occupation of female: household work	0.9154
		Occupation of female: Non-household work	0.9774
	Educational status of woman: illiterate	Marriage frequency of a husband: one time	0.9028
		Marriage frequency of a husband: more than one time	0.9864
3	Educational status of woman: literate	Marriage frequency of a husband: one time	0.4930
		Marriage frequency of a husband: more than one time, Food sufficient, Occupation of female: Non-household work	0.8839

Source: Field Survey, 2007.

It means with the changing economic status of woman from independent to dependent and food situation from deficiency to sufficiently, the probability of women suffering violence will be increased by a factor of 5.68 and 2.53 respectively.

SUMMARY AND CONCLUSION

Women's empowerment must be strengthened in order to sustain human life. This must be accomplished through the eradication of all forms of discrimination against women. Women's empowerment programs included qualities of life factors out and scientific investigation on violent situation, and controlling factors and all of them should be undertaken to address the women the problem in Tarai. High difference at the age of marriage in couple, low size of cultivated land of family, agriculture occupation of husband, food deficiency of a family, occupation of wife, dependence on husband's income, illiteracy, and re-marriage of husband were explored as significant factors in explaining the incidence of violence against women. Against public expectation in male dominated society, singularity of woman has been noted as a controlling factor of violence against them. The policy implication of this finding is to execute one time marriage of husband and wife including initiative programs for their career development rather to promote re-marriage of widow. Family size is important but has negative association with the probability of incidence of violence, is difficult to reconcile with the prior expectations. Foreign labor migration seemed to be an essential factor to be promoted unless sufficient job opportunities could be created inside the country.

Foreign labour migration should be properly managed because it has played significant role in reducing the incidence of violence against women. Availability of cultivated land with equitable distribution is found to be a significant controlling factor that leads to reduce the probability of occurrence of events, perhaps as a result of major source of income to overcome socio-economic crisis. Practical implication of this finding is to increase the land holding size, food production and household income by providing essential infrastructure facilities along with withdrawing the excess cultivated land and re-distribute it to landless farmers. Even though Tarai communities are over criticized due to decade long tradition of dowry and heavy investment system in daughter's marriage, it could hardly ensure their daughter's safeguard in their marriage place and also aid to eliminate the different forms of violence. Such practice is merely a matter of caste and class specific, particularly in higher and middle rather than a culture in Tarai region as whole. Husband employed in agriculture and employers involved in factory and mills should be properly re-oriented through awareness programs regarding the women rights and welfare in order to eliminate violence against them. Similarly economic independency of female is explored as a second vital and crucial factor in controlling the incidence of violence against them. Thus government should ensure that the women to be independent economically by acquiring skills, micro-finance

and self-employment. Female education has been proved as the highest contributable factor in declining the occurrence of violence. Thus, the buzz slogan *Education for All* should be delivered to the women of Tarai.

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APPENDIX 1

Explanation of Variables

Demographic variables	X_{10} = Amount of expenditure in a marriage of female/women interviewed (rupees)
X_1 = Family size (family members in the households)	X_{11} = Food deficiency of a family (1 for throughout the year, 0 for otherwise
X_2 = Age of woman (years)	X_{12} = Occupation of wife interviewed (1 for household work, 0 for otherwise)
X_3 = Households having members working outside within country and outside (1 for yes, 0 for no)	X_{13} = Economic dependency of female representing neither possessing of land nor having job (1 for dependent, 0 for otherwise)
X_4 = Age at marriage of wife interviewed (years)	X_{14} = Dowry for marriage of a women interviewed (1 for given, 0 for otherwise)
X_5 = Age at marriage of wife interviewed (years)	**Socio-cultural variables**
X_6 = Difference at age of marriage between male and female (years)	X_{15} = Marital status of woman interviewed (1 for single, 0 for otherwise)
X_7 = Male members in a family (Percent)	X_{16} = Educational status of woman (1 for illiterate, 0 for otherwise)
Economic variables	X_{17} = Marriage frequency of a man (1 for first, 0 for otherwise)
X_8 = Size of cultivated land of a family (bigha)	X_{18} = Marriage frequency of a woman (1 for first, 0 for otherwise)
$_9$ = Occupation of husband (1 for Farming, 0 for off-farm)	X_{19} = Number of wives (number of wives of the same husband)