Analysis on Predicting Spousal Physical Violence in the Philippines Using Binary Logistic Regression

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Abstract:

This study was conducted for the purpose of identifying the factors that contribute to spousal physical violence in the Philippines using binary logistic regression. The variables are the demographic characteristics, history of violence and the marital union profile of the couple. This paper used National Demographic and Health Survey 2013 as a research instrument. This consists of 7,182 ever-married women (weighted). Two separate regression analyses were constructed to model spousal physical violence against men and against women. Of the seventeen variables, only four variables for spousal physical violence against women are found to be significant at 0.01 level of significance with 0.6578 goodness-of-fit. The significant variables are age of the woman at first cohabitation, parental violence, frequency of husband's drunkenness and the length of cohabitation of the couple. For spousal physical violence against men, five variables are significant with 0.8673 goodness-of-fit, namely; age of the woman, if the woman ever experienced physical violence from her husband/partner, parental violence, if her father ever beaten her mother and her husband's frequency of drunkenness.

Key words: Domestic Violence, Spousal Physical Violence, Intimate Partner Relationship.

Introduction

"Ayoko na! Gusto ko na makipaghiwalay."

"Sinaktan na naman niya ko. Paulit-ulit na lang."

"Tinutukan nya ko ng kutsilyo sa harap ng mga anak ko. Binubugbog nya ko sa harap mismo ng mga anak ko."

These are the phrases often heard from the Filipinas who are victims of physical violence. Violence against women is a global public health issue and one of the major problems in the Philippines. Men batter their wives to gain control over the other to get what they want.

RA 9262 or the Anti-Violence against Women and Children Act of 2004 protects women and children from any forms of abuses. This could be physical, sexual or even emotional abuse. However, this does not prevent the growing number of reported cases of abuses in the Philippines. There is a big leap on the number of cases of physical abuse for less than ten years, from 1,100 of year 1996 to 6,500 of year 2005. Most of the perpetrators are husbands.

Women may not only refer to be victims of violence, they may also be the perpetrators. Men can also be subjected to violence. This is not a rare case yet little is known about this since not all men admit that they are abused especially by their female partners. According to Khosravipour, et al (2011), there is no significant difference between men and women perpetrators of violence.

It is important to recognize that physical abuse escalates. It often begins with what is excused as trivial contact and behavior such as threats, name calling, violence in her presence (such as punching a fist through a wall), and/or damage to objects or pets. Battery often escalates into more frequent and serious attacks such as pushing, slapping, pinching, punching, kicking, biting, sexual assault, tripping,

and throwing. Finally, it may become life threatening with serious behaviors such as choking, breaking bones, or the use of weapons.

Objective of the Study

The purpose of this study is to identify the factors that contribute to spousal physical violence against men and against women in the Philippines. This will be done through modelling spousal physical violence.

Figure 1 Research Paradigm
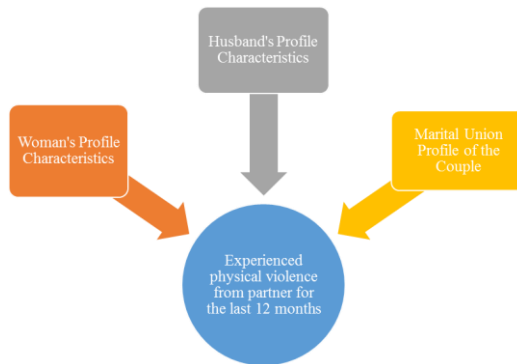
Statement of the Problem

- What are the demographic characteristics of the respondent, her husband and their marital union profile?
- What are the forms of physical violence?
- What could be the reasons for wife beating?
- What are the factors that contribute to spousal physical violence of the following:
  - Against women?
  - Against men?

Scope and Limitation

National Demographic and Health Survey (2013) was used to determine the factors that contribute to spousal physical violence in the Philippines. This paper focuses on physical violence among ever-married women, aged 15 to 49, by their husbands/partners for the last 12 months. Violence against men are predicted using the answers of the wives, who were the respondents of the survey.

The variables used in this study are all based and generated on the NDHS 2013 data set.

The result of this study will not state the causes of spousal physical violence in the Philippines rather only the factors that contribute and are associated with the occurrence of violence. Further studies must be conducted to conclude that the variables that will be found significant are the causes or reasons for spousal physical violence.

Review of Related Studies

As to Ysmael (2012), the common causes of abuses among women by their spouses are the low self-esteem of the wife, jealousy, poor communication skills and coping behaviour.

Religion plays a vital role in the decision-making of many individuals. According to The Heritage Foundation (1996), the strength of family unit intertwined with the practice of religion. Church-goers are more likely to manifest high levels of satisfaction in marriage; thus, less occurrence of violence.

Violence from the family of origin has a great impact towards spousal physical violence. Women who are found to be perpetrated by their parents or fathers have ever beaten their mothers are subjected to spousal physical violence (Coker, et al, 2000). The analysis of Torlao (1997) produces a high Cramer coefficient of correlation which indicates that there exists a significant relationship between the incidence of conjugal

assaults and childhood exposure to family violence. Moreover, the study shows that a husband who is exposed to family violence during his childhood determines the occurrence of conjugal assault, while the exposure of a wife is only a contributory factor. As per Maneta, Cohen, Schulz & Waldinger (2012), woman's severity of childhood of physical abuse is positively linked with physically behaviour towards her partner and with being the object of more aggression from her partner.

Strong links have been found between the alcohol consumption of the husbands and the occurrence of intimate partner. Frequent heavy drinking increases the risks of violence and conflicts between the couple. (World Health Organization)

Men, whose wives have same education as them, are more likely to be abused by their partners (Seow & Foo, 2006).

As to Oduro, Deere & Catanzarite (2012), physical violence is less likely to occur in a relationship in which man is more economically active than when are both economically active. A study on women's working status and physical violence in India showed that women's labour participation rate decreases the probability of spousal physical violence (Chin, 2007).

In regards with violence against women, educated women seek help but do not fight back to their husbands (Kalaw & Nieto, 2012).

Methodology

Statistical Tool

This paper uses Stata 12 in analysing the data. Stata is good at handling large survey datasets that are conducted by sampling techniques other than simple random sampling. Using the *svy* command in Stata will give this study better and reliable results and estimations.

Statistical Treatment

For modelling spousal physical violence against men and against women, the dependent variable is dichotomous (two outcomes) whereas the independent variables are combination of continuous and categorical variables. Binary logistic regression analysis is the most appropriate method in treating this kind of data. Logistic regression is a specialized form of regression that is formulated to predict and explain a binary (two-group) categorical variable rather than a metric dependent measure (Hair et al, 2010). Unlike multiple regression, logistic regression lacks of assumptions. It does not require any distributional form of the independent variables.

The general model of multiple logistic regression is given by the equation,

$$\hat{g}(x) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \dots + \beta_p x_p$$

Two separate regression analyses are used to model spousal physical violence. The first one is for against women (women as victims of violence) and the second one is for violence against men which also corresponds to women as perpetrators in the abusive relationship.

For women as victims of spousal physical violence,

$$\hat{g}(x) = \beta_0 + \beta_1 x_{residence} + \beta_2 x_{ethnicity} + \beta_3 x_{religion} + \beta_4 x_{fbeatm} + \beta_5 x_{parviol} + \beta_6 x_{age}$$
$$+ \beta_7 x_{agecohabit} + \beta_8 x_{marital} + \beta_9 x_{wwork} + \beta_{10} x_{drunk\_2} + \beta_{11} x_{drunk\_3}$$
$$+ \beta_{12} x_{drunk_4} + \beta_{13} x_{hwork} + \beta_{14} x_{cohabityr} + \beta_{15} x_{agediff\_2} + \beta_{16} x_{agediff\_3}$$
$$+ \beta_{17} x_{educdiff\_2} + \beta_{18} x_{educdiff\_3} + \beta_{19} x_{wealth\_2} + \beta_{20} x_{wealth\_3} + \beta_{21} x_{wealth\_4}$$
$$+ \beta_{22} x_{wealth\_5} + \beta_{23} x_{earn\_2} + \beta_{24} x_{earn\_3} + \beta_{25} x_{earn\_4}$$

For men as victims of spousal physical violence (women as perpetrators),

$$\hat{h}(x) = \beta_0 + \beta_1 x_{residence} + \beta_2 x_{ethnicity} + \beta_3 x_{religion} + \beta_4 x_{fbeatm} + \beta_5 x_{parviol}$$
$$+ \beta_6 x_{PVever\_spouse} + \beta_7 x_{age} + \beta_8 x_{agecohabit} + \beta_9 x_{wwork} + \beta_{10} x_{drunk\_2}$$
$$+ \beta_{11} x_{drunk\_3} + \beta_{12} x_{drunk_4} + \beta_{13} x_{hwork} + \beta_{14} x_{cohabityr} + \beta_{15} x_{agediff\_2}$$
$$+ \beta_{16} x_{agediff\_3} + \beta_{17} x_{educdiff\_2} + \beta_{18} x_{educdiff\_3} + \beta_{19} x_{wealth\_2} + \beta_{20} x_{wealth\_3}$$
$$+ \beta_{21} x_{wealth\_4} + \beta_{22} x_{wealth\_5} + \beta_{23} x_{earn\_2} + \beta_{24} x_{earn\_3} + \beta_{25} x_{earn\_4}$$

The first nine variables correspond to the woman's profile characteristics, where

      residence is the type of residence (rural/urban)

      ethnicity is the ethnicity of the woman

      religion is the religion of the woman

      fbeatm is if the father beat the respondent's mother

      parviol is the parental violence

      age is the current age of the respondent

      agecohabit is the age of the respondent when she first cohabited with her partner

      marital is if she got married more than once

      PVever_spouse is if the woman ever experience spousal physical violence

      wwork is the woman's working status

whereas the succeeding two variables, represents the husband's profile, where

      drunk is the frequency of the husband being drunk

      hwork is the husband's working status

And lastly, the last five variables are the marital union profile of the couple, where

      cohabityr is the length of cohabitation of the couple, in years

      agediff is the spousal age difference

      educdiff is the spousal education difference

      wealth is the household's wealth index

      earn is who earns more in the family

The models containing the significant independent variables will be used to compute for the probability of success (p) and failure (1-p). As to Hosmer & Lemeshow (2000), the fitted values are given by the equations,

For women as victims,

$$(x) = \frac{e^{\hat{g}(x)}}{1 + e^{\hat{g}(x)}}$$

For women as perpetrators,

$$\hat{\pi}(x) = \frac{e^{\hat{h}(x)}}{1 + e^{\hat{h}(x)}}$$

Logistic regression analysis has no assumptions and yet there are things need to consider in running an analysis, like a minimum number of observations-to-number of variable ratio (10:1)

Results and Discussions

What are the demographic characteristics of the respondent, her husband and their marital union profile?

Table 1 shows the percentage of women who are victims and at the same time perpetrators in the relationship.

The number of abused women is almost the same in rural (50.10%) and urban areas (49.90%), but more of these women came from the place where Tagalog (26.32%) and Cebuano (23.28%) are spoken. In terms of religion, women who are Roman Catholics (80.35%) experienced physical violence from husbands/partners than any other religions. The number of abused women who got married just once (87.80%) outnumbered the number of abused women who got married more than once. For women who experienced and seen violence from parents, it is a different story. Women who haven't experienced and seen violence from parents are often the victims of violence with 82.66 and 72.24 percent, respectively. Women's working status does not show empowerment. The table shows that regardless of women's working status, they are still abused by their husbands/partners.

Women whose husbands have work and get drunk more often are the victims of violence.

Husbands who are older than women are more dominant in the relationship. These husbands (71.28%) are found to abuse their wives physically, but in terms of education difference, couples who are equally educated (40.37%) experienced physical violence and the husband is the perpetrator in the relationship. Lastly, poorer families are more susceptible to violence than richer families.

In an urban setting, many women abused their husbands with 91.23 percent. The frequency of women who perpetrated husbands are the about the same regardless of their experience of spousal physical violence. The results of other variables are almost similar with women as victims in an intimate partner relationship.

Table 1. Descriptive Statistics: Philippines, 2013

Variable	Women as Victims (%)		Women as Perpetrators (%)	
	No	Yes	No	Yes
Residence				
Urban	49.95	49.90	92.49	
Rural	50.05	50.10	7.51	8.77
Ethinicity				
Tagalog	32.02	26.32	32.42	23.78
Cebuano	19.80	23.28	19.37	26.95
Ilocano	8.42	11.95	8.55	9.34
Ilonggo	8.65	11.26	8.77	9.08
Bicolano	5.92	5.22	5.98	4.78
Waray	3.71	5.01	3.48	7.25
Kapampangan	2.44	1.14	2.52	0.69
Maranso	1.51	0.26	1.53	0.41
Tausog	1.17	0.69	1.20	0.48
Other	16.35	14.87	16.19	17.23
Religion				
Roman Catholic	78.27	80.35	77.83	84.63
Protestant	5.25	5.18	5.37	3.85
Iglesia ni Kristo	2.78	2.48	2.79	2.51
Aglipay	0.84	1.50	0.87	0.98
Islam	5.49	3.12	5.56	3.19
None	0.03	0.00	0.03	0.00
Other	7.34	7.37	7.56	4.84
Marital				
Married Once	92.15	87.80		
Married More than Once	7.85	12.20		
Parental Violence				
Yes	6.42	17.34	6.09	17.42

No	93.58	82.66	93.91	82.58
Father beat Mother				
Yes	18.06	27.76	6.90	13.96
No	81.94	72.24	93.10	86.04
Ever Experienced Physical Violence from Current/Previous Husband				
Yes			12.51	41.25
No			87.49	58.75
Woman's Working Status				
Yes	52.86	55.29	53.33	49.08
No	47.14	44.71	46.67	50.92
Husband's Working Status				
Yes	98.66	97.49	98.63	98.22
No	1.34	2.51	1.37	1.78
Husband's Frequency of Drunkenness				
Does not drink	24.31	8.13	24.29	13.81
Never	5.51	2.02	5.48	3.55
Sometimes	64.27	56.87	63.54	67.57
Often	5.91	32.98	6.69	15.07
Spousal Age Difference				
Husband is older	70.27	71.28	70.47	68.75
Wife is older	19.56	21.31	19.54	20.80
Aame age	10.17	7.41	9.99	10.44
Spousal Education Difference				
Husband is more educated	21.89	25.30	21.94	23.63
wife is more educated	29.70	34.33	29.48	35.24
equally educated	48.41	40.37	48.58	41.13
Wealth Index				
Poorest	19.18	21.05	19.13	20.92
Poorer	19.03	25.47	18.83	25.55
Middle	20.07	22.73	20.20	20.30
Richer	21.26	19.57	21.19	20.93
Richest	20.48	11.18	20.65	12.30
Who earns more				
wife earns more than husband	22.27	21.68	22.03	24.55
wife earns less than husband	56.15	58.47	56.33	55.78
about the same	19.48	18.36	19.46	18.97
husband does not bring in the money	2.09	1.50	2.18	0.70

Note: the current age of the woman, her age at first cohabitation and cohabitation duration of the couple are measured numerically.
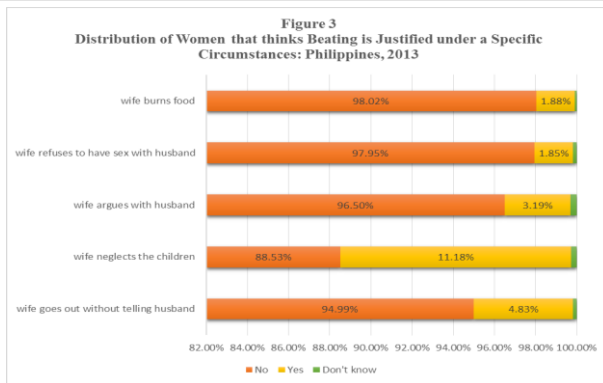
What are the forms of physical violence?

All ever-married women were asked a set of questions: a.) if they have been pushed, shook or had something thrown at them, b.) slapped them, c.) punched or hit them, d.) kicked or dragged them, e.) strangled or burnt and f.) threatened them with knife/gun or other weapon. These questions are used to measure physical violence.

Figure 2
Percentage Distribution of Abused Women by Forms of Physical Violence: Philippines, 2013
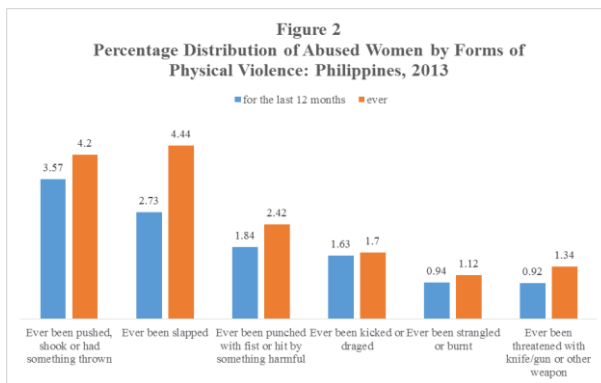
Many women have been abused before as compared for the last 12 months. Most women have been pushed, shaken or had something thrown and slapped by their husbands/partners and least experienced strangles or burns.

What are the possible reasons for wife beating?

The reasons or causes of wife beating are not listed on the NDHS 2013; however the respondents were asked whether they think their husbands/partners are justified in hitting or beating wives under a series of circumstances: if they burn the food, refuse to have sex with their husbands, argues with husband, neglect the children and they go out without telling their husbands. This is done to measure the self-esteem of women.

Figure 3
Distribution of Women that thinks Beating is Justified under a Specific Circumstances: Philippines, 2013

In the Philippines, most women have answered "no". They do not agree that beating is justified if they have encountered the above situations. About 98 percent of the respondents thinks that it is not rationale to be hurt if they burn the food and refuse to have sex with their husbands whereas 97 percent and 95 percent for arguing with husband and going out without telling, respectively. Neglecting the children is the least justified reason with only about 89 percent.

What factors do contribute to spousal physical violence?

4.2.1 Woman as victim of abuse

Using logistic regression, the factors that contribute to a woman as the victim of spousal physical violence are predicted. Other variables are found not to be significant at 0.01 level of significance; only four variables are significant with 0.6578 goodness-of-fit. (Appendix B)

Table 2 Significant Variables for Women as Victims at 0.01 Level of Significance

	Odds Ratio	Coefficient	t	P > |t|	Joint Effect
age cohabit	0.9226371	-0.0805193	-5.54	0.000	
parental violence	2.502175	0.9171604	5.43	0.000	
Drunk					
never(2)	1.180748	0.1661485	0.37	0.713	0.0000
sometimes(3)	2.629168	0.9666676	5.43	0.000	

often(4)	16.76229	2.819132	13.86	0.000	
Cohabit	0.971346	-0.0290726	-4.44	0.000	
Constant	0.1295047	-2.044038	-5.56	0.000	

$$\hat{g}(x) = -2.04438 - 0.0805193 x_{agecohabit} + 0.9171604 x_{parviol} + 0.1661485 x_{drunk\_2}$$
$$+ 0.9666676 x_{drunk\_3} + 2.819132 x_{drunk\_4} - 0.0290726 x_{cohabit}$$

The odds ratios of the predictor variables are presented above. The chance of a woman to be a victim of physical spousal violence decreases (OR=0.922) if she first cohabited at an older age. A woman who has experienced parental violence is more likely to be violated 3 times (OR=2.50) higher than a woman who has not. The husband's frequency of drunkenness plays a major role on the occurrence of violence. The more frequent a husband drinks, the more likely, he will abused her wife. And as the length of cohabitation of the couple gets longer, the odds (OR=0.97) of being physically violated decreases.

$$\hat{\pi}(agecohabit = 9, parviol = yes, drunk = often, cohabit = 3)$$
$$= \frac{e^{-2.04438 - 0.0805193(9) + 0.9171604(1) + 0.1661485(0) + 0.9666676(0) + 2.819132(1) - 0.0290726(0)}}{1 + e^{-2.04438 - 0.0805193(9) + 0.9171604(1) + 0.1661485(0) + 0.9666676(0) + 2.819132(1) - 0.0290726(0)}}$$
$$= 0.7247$$

For a worst-case scenario, a woman who got cohabited at the age of 9 and experienced parental violence, whose husband drinks more often and have stayed with the partner for a couple of months has 72.47 percent chance of being physically mistreated by her partner.

Men as Victims of Violence (Woman as Perpetrators)

The factors that contribute to spousal physical violence against men are determined using logistic regression. Only five variables are found not to be significant at 0.01 level of significance and with a highest goodness-of-fit of 0.8673. (Appendix D)

Table 3. Significant Variables for Women as Perpetrators at 0.01 Level of Significance

	Odds Ratio	Coefficient	t	P > |t|	Joint Effect
age	0.9580349	-0.0428711	-7.27	0.000	
1.ever experienced spousal physical violence	4.095312	1.409843	14.11	0.000	
parental violence	2.107293	0.7454043	5.53	0.000	
father beat the respondent's mother	1.541703	0.4328875	4.00	0.000	
drunk					
never(2)	1.16365	0.1513168	0.57	0.566	0.0005
sometimes(3)	1.554784	0.4413369	3.46	0.001	
often(4)	2.040353	0.7131226	3.85	0.000	
Constant	0.1498186	-1.89833	-8.93	0.000	

$$\hat{h}(x) = -1.89833 - 0.0428711 x_{age} + 1.409843 x_{PVever\_spouse} + 0.7454043 x_{parviol}$$
$$+ 0.4328875 x_{fbeatm} + 0.1513168 x_{drunk\_2} + 0.44133690 x_{drunk\_3}$$
$$+ 0.7131226 x_{drunk\_4}$$

Variables *age, PVever_spouse, parviol, fbeatm and drunk* are the only variables found to be significant at 0.01 level of significance. A younger woman is more likely to beat her husband. A woman who ever experience spousal physical violence and parental violence is more likely to abuse her husband/partner. Also if her father beat her mother, she is more likely to abuse her partner. Same way, husband who gets drunk more often are more likely to experience physical violence from their female partners.

$$\pi(age = 15, PVever\_spouse = yes, parviol = yes, fbeatm = yes, drunk = often)$$
$$= \frac{e^{-1.89833 - 0.0428711(15) + 1.409843(1) + 0.7454043(1) + 0.4328875(1) + 0.1513168(0) + 0.44133690(0) + 0.7131226(1)}}{1 + e^{-1.89833 - 0.0428711(15) + 1.409843(1) + 0.7454043(1) + 0.4328875(1) + 0.1513168(0) + 0.44133690(0) + 0.7131226(1)}}$$
$$= 0.6813$$

A woman, aged 15, who has a history of spousal and parental violence, whose father have beaten her mother and whose husband gets drunk more often has 68.13 percent chance to abuse her partner physically.

Conclusions and Recommendations

Conclusions

History of violence predicts occurrence of spousal physical violence

Violence brings trauma to the victim. As a result, they may become either still a victim or now a perpetrator in the relationship.

Women who were hurt by their parents (parental violence) are more likely to be victims of violence. According to the Violence as Trauma and Learned Helplessness Theories, victims of violence tend to align themselves from the perpetrators of violence because they think that no matter what they do, they could not escape from it and that they could not get any better. The result is similar to the study of Coker, et al (2000).

This is a different from the stories of other victims of violence. Some became the perpetrators. They think violence is the only way they could escape from being violated. Based on the result, parental violence and if the father have ever beaten the mother is a factor of spousal physical violence against men. One theory, Behavioural Genetics, states that the behaviour of one parent, even being violent, can be inherited.

Ever experienced spousal physical violence from husband is a deriving factor for spousal physical violence against men. Based on the result, women who ever experienced spousal physical violence are more likely to retaliate to their husbands by hurting them back. This is somehow a good in a way that women nowadays can defend themselves from those who hurt them; however, this is still a form of violence.

Husband's alcohol consumption plays a vital role in predicting physical violence

It is found that husbands who get drunk more often are more likely to abused their wives and at the same time, be the victims of violence.

Alcohol exacerbates marital problems when conflict already exists (Addiction Technology Transfer Center Network). In Philippines, when a man has problems and does not know how to cope with it, he drinks to enjoy. Drinking seems to be a way forget problems for most Filipinos; however, some drinkers tend to have an emotional-outburst when drunk. Some just got have the courage to say what they feel while others express it through violence.

Newlywed couples are at risk of spousal physical violence

Newlyweds encounter more problems that may lead to violence than those who lives together for a longer time.

Some couples in the Philippines are not yet ready for marriage, for building a family. Some have just got into a relationship who have been together for just a couple of months. They do not know each other well. And when they decided to live together, that is when a problem arises. They are not aware of each other's attitudes and some do not know how to deal with that. This often leads to argument and sooner to violence.

Younger women are more susceptible to violence

In this study, it is found that younger women are more susceptible to violence. According to Khosravipour, et al (2011), age is risk factor in severe violence. Most Filipino nowadays marry at younger age to escape from families or family problems. They are not mature enough to handle things, even small things. By then, when they encounter problems, they will now have hard to time dealing with it. In most cases, couples argue. This is how violence in the Filipino families start.

Women who get married at younger age are also susceptible to violence.

Recommendations

Revision of the research instrument

The NDHS is biased to women. The respondents for the survey are all women and husband's demographic characteristics are just limited to husband's working status and frequency of drunkenness. Husband's alcohol consumption is clear to be the predictor for spousal physical violence but what about woman's alcohol consumption? To fully understand the occurrence of violence, the characteristics of both parties should all be present at the questionnaire.

Research improvement (further studies on spousal physical violence and the demographics of the couple)

The results for predicting violence vary from country-to-country. Some variables are found to be significant as factors in other countries and some are not. The results are not consistent. This could be because of the differences in culture and traditions. And so, there is really no definite factor for predicting spousal physical violence.

Similar countries must be grouped based on cultures and traditions using cluster analysis and do comparative study within these groups of countries. Through this, it will give a clearer view of how demographic characteristics of the man and a woman and of their marital union contribute to the occurrence of violence. And it will now be a lot easier to target violence.

Targeting violence

The factors that contribute to spousal physical violence are determined. The result is useful in the implementation and

improvement of laws in the Philippines, particularly the RA 9272. The law must also be extended to abused husbands. It may be difficult for now since men do not admit they are being violated by their female partners but at some time, if only they will be educated and informed, violence can be lessen and somehow avoided.

Programs, such as focusing on abused children, must be done. The result shows that violence is brought by a violence itself.

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Appendix A – Full Model of Women as Victims of Violence

note: 8bn.ethnicity != 0 predicts failure perfectly					
8bn.ethnicity dropped and 51 obs not used					
note: 9.ethnicity != 0 predicts failure perfectly					
9.ethnicity dropped and 39 obs not used					
note: 7.religion != 0 predicts failure perfectly					
7.religion dropped and 2 obs not used					
note: 0.marital omitted because of collinearity					
Survey: Logistic regression					
Number of strata = 33		Number of jobs		=	3737
Number of PSUs = 770		Population size		=	3352.1617
		Design df		=	737
		F (34, 704)		=	7.46
		Prob > F		=	0.0000

Victim	Odds Ratio	Coefficient	t	P > |t|	Joint Effect
1.type of residence	1.001957	0.0019548	0.01	0.992	
ethnicity					
Cebuano (2)	1.377165	0.3200274	1.22	0.222	
Ilocano (3)	1.995906	0.6910983	2.28	0.023	
Ilonggo (4)	1.48302	0.3940803	1.32	0.189	
Bicolano (5)	0.7418855	-0.2985604	-0.68	0.494	
Waray (6)	2.140033	0.7608212	1.95	0.052	0.1013
Kapampangan (7)	0.9199416	-0.0834451	-0.14	0.891	
Maranso (8)	1	0			
Tausog (9)	1	0			
Other (996)	1.049902	0.0486986	0.16	0.869	
religion					
Protestant (2)	1.324259	0.2808528	0.64	0.522	
Iglesia ni Kristo (3)	0.7104594	-0.3418434	-0.79	0.433	
Aglipay (4)	1.105809	0.1005775	0.13	0.900	0.8190
Islam (5)	1.201166	0.1832928	0.26	0.796	
None (7)	1	0			
Other (96)	1.340032	0.2926934	1.07	0.284	
1.father beat mother	1.119589	0.1129615	0.55	0.583	
1.parental violence	1.991899	0.6890884	2.80	0.005	
current age	1.438104	0.3633255	2.30	0.022	
age of the woman at first cohabitation	0.6375835	-0.4500701	-2.85	0.005	
0.marital status	1	0			
1.working status of the woman	0.8284696	-0.1881751	-0.92	0.357	
drunk					
Never (2)	0.8985187	-0.1070077	-0.16	0.873	
Sometimes (3)	2.610697	0.9596172	3.22	0.001	0.0000
Often (4)	23.02147	3.136427	9.58	0.000	
1.husband's working status	0.6767932	-0.3903896	-0.81	0.418	
cohabitation duration	0.6788718	-0.3873229	-2.46	0.014	
spousal age difference					
wife is older (2)	1.541077	0.4324817	2.18	0.030	0.0748
same age (3)	0.93319893	-0.0691473	-0.22	0.828	
spousal education difference					
wife is better educated (2)	0.8969532	-0.1087516	-0.50	0.619	0.8841
equally educated (3)	0.9319039	-0.0705256	-0.33	0.740	
wealth index					
Poorer (2)	0.711491	-0.3403925	-1.46	0.146	
Middle (3)	0.6515967	-0.4283294	-1.82	0.069	0.0410
Richer (4)	0.5279418	-0.6387693	-2.29	0.022	
Richest (5)	0.3058076	-1.184799	-3.04	0.002	

earn					
less than him (2)	1.011869	0.0117994	0.06	0.956	0.7952
about the same (3)	1.163441	0.1513821	0.61	0.543	
husband doesn't bring in money (4)	0.6993788	-0.3575628	-0.62	0.537	
_constant	0.2439495	-1.410794	-1.84	0.067	

Appendix B – Summary Statistics of the Reduced Model for Women as Victims

Survey: Logistic regression			
Number of strata	= 33	Number of obs.	3745
Number of PSUs	= 770	Population size	3360
		Design df	737
		F(6,76)	7.62
		Prob > F	0.0000
		Goodness-of-fit	0.6578

Appendix C – Full Model for Women as Perpetrators

note: 7bn.ethnicity != 0 predicts failure perfectly					
7bn.ethnicity dropped and 65 obs not used					
note: 8.ethnicity != 0 predicts failure perfectly					
8.ethnicity dropped and 51 obs not used					
note: 7.religion != 0 predicts failure perfectly					
7.religion dropped and 2 obs not used					
Survey: Logistic regression					
Number of strata	= 33		Number of obs	=	3711
Number of PSUs	= 772		Population size	=	3309.0546
			Design df	=	739
			F (34, 704)	=	7.74
			Prob > F	=	0.0000

Perpetrator	Odds Ratio	Coefficient	t	P > |t|	Joint Effect
1.type of residence	1.261828	0.2325613	1.54	0.123	
ethnicity					
Cebuano (2)	1.970246	0.6781586	3.12	0.002	
Ilocano (3)	2.014202	0.7002231	2.69	0.007	
Ilonggo (4)	2.007754	0.6970168	2.66	0.008	
Bicolano (5)	1.558187	0.4435229	1.30	0.196	0.0008
Waray (6)	4.323005	1.463951	4.79	0.000	
Kapampangan (7)	1	0			
Maranso (8)	1	0			
Tausog (9)	1.202225	0.1841739	0.17	0.866	
Other (996)	2.051983	0.7188066	3.05	0.002	
religion					
Protestant (2)	0.7139472	-0.3369463	-1.19	0.236	
Iglesia ni Kristo (3)	0.7950836	-0.229308	-0.56	0.576	
Aglipay (4)	0.6955529	-0.360482	-0.69	0.493	0.2609
Islam (5)	0.6460829	-0.4368275	-0.83	0.408	
None (7)	1	0			
Other (96)	0.5563228	-0.5864065	-2.15	0.032	
1.father beat mother	1.279345	0.2463481	1.64	0.102	
1.parental violence	1.983809	0.6850185	3.45	0.001	
1.ever experienced physical violence from current/previous husband	3.328656	1.202569	8.42	0.000	
current age	1,011984	0.0119128	0.09	0.930	

age of the woman at first cohabitation	0.9378214	-0.0641958	-0.49	0.628	
1.working status of the woman	0.790107	-0.2355869	-1.37	0.170	
drunk					
Never (2)	0.8598568	-0.1509894	-0.33	0.741	0.0017
Sometimes (3)	1.614303	0.478903	2.40	0.017	
Often (4)	2.647223	0.9735112	3.61	0.000	
1.husband's working status	2.069916	0.7275083	1.09	0.278	
cohabitation duration	0.9563896	-0.0445899	-0.33	0.740	
spousal age difference					
wife is older (2)	1.416045	0.3478679	2.16	0.031	0.0946
same age (3)	1.134582	-0.0445899	0.54	0.593	
spousal education difference					
wife is better educated (2)	1.476406	0.3478679	2.06	0.040	0.0419
equally educated (3)	1.06159	0.1262644	0.32	0.752	
wealth index					
Poorer (2)	1.08996	0.0861738	0.46	0.647	
Middle (3)	0.739296	-0.3020569	-1.46	0.146	0.2262
Richer (4)	0.8948805	-0.2295634	-1.01	0.313	
Richest (5)	0.6786304	-0.3876787	-1.37	0.171	
earn					
less than him (2)	0.7462325	-0.2927181	-1.67	0.096	
about the same (3)	0.8852789	-0.1218525	-0.58	0.562	0.2406
husband doesn't bring in money (4)	0.4247723	-0.8562019	-1.37	0.172	
_constant	0.0674148	-2.696847	-3.22	0.001	

Appendix D – Summary Statistics of the Reduced Model for Women as Perpetrators

Survey: Logistic regression				
Number of strata	=	33	Number of obs.	7981
Number of PSUs	=	800	Population size	7015
			Design df	767
			F(6,76)	55.81
			Prob > F	0.0000
			Goodness-of-fit	0.8673