Factors Associated with Severity of Intimate Partner Abuse in Mexico: Results of the First National Survey of Violence Against Women

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ABSTRACT

Objective: To identify factors associated with the severity of intimate partner abuse (IPA) in Mexico.

Methods: Data were gathered from the National Survey of Violence Against Women (November 2002-November 2003), a nationwide study in which 18,902 women over the age of 14 participated. Subjects were recipients of national public health care services. The severity of IPA was measured using a 27-item scale. Multinomial logistic regression analyses were performed to explore significant factors associated with partner violence.

Results: One in four participants reported experiencing IPA. This model showed that younger and less educated women had a higher risk of IPA. Working out of the home (OR [odds ratio]1.3, 95% confidence interval [CI] 0.99-1.72), two or more children in the household (OR 1.44, CI 1.18-1.77), alcohol consumption (OR 2.51, CI 1.63-3.90) and history of childhood abuse (OR 3.7, CI 3.03-4.52) increased the possibility of severe violence. The most important predictor of severe IPA was the partner's alcohol consumption (daily or almost daily, OR 14.7, 95% CI 13.25-16.46).

Conclusions: Awareness about the risk factors associated with IPA will help identify populations at greater risk of severe injury and could orient the health sector to direct actions toward this vulnerable population.

Key words: Partner abuse; severity; violence; National Survey; Mexico

Various studies conducted in Mexico in different populations estimate that 15% to 71% of women have been physically or sexually assaulted by an intimate partner during their lifetime.[1] Current intimate partner abuse (IPA) among women attending Mexican public clinics or hospitals is estimated to range from 6% to 32%.[2-5] Variability in the prevalence of IPA in Mexico appears to depend on the measuring scale used, as well as the definition of IPA and the cultural context.

A small number of studies (none of them done in Mexico) have estimated that the greater the severity of IPA, the greater the risk of severe injuries, emotional distress, mental disorders or permanent disabilities.[6,7]

IPA is defined in this study as a "repetitive pattern of abuse inflicted by the woman's male partner. Abuse is characterized by a series of coercive behaviours that include physical, emotional, economic or sexual violence."[8]

The main objective of the study was to identify factors associated with the severity of IPA among women who had sustained an intimate relationship during the previous 12 months, had for any reason attended a public health care facility and who had participated in the National Survey of Violence Against Women (ENVIM) 2003.[8]

METHODS

The ENVIM-2003 surveyed a representative national and state sample of users of public health care services in Mexico during November 2002 to November 2003. Institutions from Social Security and the Ministry of Health were included,[8] since they provide medical coverage to 70% of the Mexican population.[9] Additionally, these institutions had a sample frame of their medical units and made major provisions to facilitate our access.

Selection of subjects

A stratified probabilistic sampling was carried out in two stages. In the first stage, clinics and hospitals located throughout the country were selected with a proportional probability to the number of units per type of institution. In the second stage, all women over age 14, recipients of preventive or curative services at those medical units, were selected by systematic sampling. The cutoff age of 14 years was selected because, in Mexico, women are susceptible to intimate relationships at an early age. The sample size was calculated to obtain a minimum prevalence of 19% in each of the 32 States; more details are described in a previous publication.[2] The survey included 26,042 women.[2]

The information was collected by trained female interviewers, and interviews were held in private rooms. The response rate was

98%, similar to rates reported by other studies on violence in Mexico.[10,11] Approval for this project was granted by the National Institute of Public Health's Ethics Committee.

The ENVIM-2003 questionnaire* has 17 sections, including sociodemographic questions on both the interviewee and her partner, frequency of alcohol consumption, perception of gender roles, the family and characterization of partner abuse.

Measures

Severity of Partner Abuse

A 27-item scale was selected from two instruments that have shown sensitivity in measuring partner abuse: the Index of Spouse Abuse[12] and the Severity of Violence Against Women Scale.[13] The items are shown in Appendix 1. For modeling purposes, the number of variables was reduced to a small number of factors; therefore, factor analysis was used. Four factors were obtained, which together explained 62% of the variance. To determine confidence, Cronbach's alpha was calculated to be 0.99. With the linear combination of these factors, a Severe Intimate Partner Abuse Index (SIPAI) was constructed. The cutting points were as follows: scores under the mean indicated *no violence*; from the mean up to the mean plus one standard deviation *non-severe violence*; and the mean plus values over one standard deviation indicated cases of *severe violence* (for a more detailed description of the methodology, see Valdez et al.[14]). The frequency of violent acts during the previous year was recorded on a 4-point scale for each item (0=never, 1=once, 2=occasionally and 3=many times). These instruments have been used previously and validated with the Mexican population.[15]

Individual Variables

For both subject and partner, variables included were: age; years of schooling; monthly income, expressed as a multiple of the minimum wage (during 2003 the minimum wage was the equivalent of C$5.01 daily[16,17]); and number of children in the household under 18 years of age. These variables were measured on a continuous scale. Also included were work activity during the week before the interview and frequency of alcohol consumption. Additionally, subjects' information regarding marital status and history of childhood abuse was collected. All these variables were measured on a categorical scale.

"Partner" was defined as the last spouse or intimate partner with whom the subject had lived during the year preceding the survey.[2] Partner information was reported by the women.

Socio-economic Indicators

Using principal component analysis, the Household Assets Index was generated, which is a proxy variable for economic status in the home. This index is based on house ownership, number of electrical appliances and possession of a car or truck. Crowded living conditions (a mean of 2.5 residents or more per bedroom) was included as a dichotomous variable. The index was categorized by terciles corresponding to social levels or stratum: low, medium and high.

Statistical analysis

This model included 77% (n=14,503) of subjects who had had an intimate partner during the previous year and had provided complete information. The dependent variable was the SIPAI, which

*   Copies of the questionnaire can be obtained by contacting Rosario Valdez: rvaldez@insp.mx.

Table 1. Demographic Characteristics of 18,902 Female Participants and Their Partners, Mexico

Variable	Frequency	%
Age (years)		
15-24	3789	20.0
25-34	6375	33.7
35-44	4642	24.6
45-54	2590	13.7
≥55	1506	8.0
Education		
No education	1624	8.6
Elementary and junior high school	13,055	69.1
High school and more	4223	22.3
Work activity*		
Student	92	0.5
Unpaid worker	233	1.2
Housewife	9715	51.4
Unemployed	3568	19.0
Fieldworker	112	0.6
Self-employed	1490	7.9
Employee	3639	19.3
Income (multiple of minimum monthly salary)†		
No salary	13,994	74.0
Up to two salaries	2870	15.2
3-4 salaries	1254	6.6
4-6 salaries	449	2.4
>6 salaries	335	1.8
Type of locality		
Rural	231	12.3
Urban	16,585	87.7
Frequency of alcohol consumption*		
Does not drink	9891	52.3
Occasionally	8233	43.6
1 or more times per month	558	3.0
Frequency of childhood abuse*		
Never	10,502	55.6
Occasionally	4804	25.4
Several times to almost always	3538	18.7
Socio-economic characteristics of partner		
Education*		
No education	1445	7.6
Elementary and junior high school	11,858	62.8
High school and more	4363	23.1
Work activity*		
Student	249	1.3
Unemployed	1181	6.2
Fieldworker or mason's assistant	3038	16.1
Self-employed	2675	14.2
Employee‡	11,151	59.0
Income (multiple of minimum monthly salary)*†		
0 to <2	7528	39.8
2 to <5	6812	36.0
≥5	1210	6.4
Frequency of alcohol consumption*		
Does not drink	2869	15.2
Occasionally	9492	50.2
1-3 times per month	2459	13.0
1-3 times per week	2520	13.3
Every day or almost every day	951	5.0

Source: ENVIM, 2003
* There were missing values.
† The minimum daily pay a worker must receive by law.[16] The minimum salary during 2003 was the equivalent of C$3.83. Exchange rate: C$1 = 11.38 pesos, 2006.
‡ Employees included teachers, office employees and manual labourers.

plete information. The dependent variable was the SIPAI, which had three categories ordered as 0=no violence, 1=non-severe violence and 2=severe violence. The ordinal logistic regression model (Model 1) was used initially but rejected later because it did not comply with the model's central supposition test (test of parallel lines);[16] the multinomial logistic regression model (Model 2) was used instead. Model 2 assumes that the dependent variable has more than two non-ordered categories. Subjects who were exposed to severe partner violence and those who reported non-severe violence were compared with those who did not report violence.

Variables that showed a value of p<0.20[18] in the bivariate analysis were tested in the multivariate model as confounders and effect

Table 2. Factors Associated with Partner Violence, Mexico (unadjusted odds ratios)

Variable	Severe Violence* N=1,758		p	Non-severe Violence* N =3,430		p
Women's characteristics	**OR**	**CI 95%†**		**OR**	**CI 95%†**	
Age (years)						
≥55		1			1	
45-54	1.40	(1.17-1.68)	0.00	1.05	(0.78-1.42)	0.72
35-44	1.56	(1.21-2.01)	0.00	1.08	(0.92-1.27)	0.35
25-34	1.32	(1.19-1.46)	0.00	1.03	(0.75-1.40)	0.85
15-24	1.46	(1.31-1.62)	0.00	1.32	(0.95-1.83)	0.09
Education						
High school and more		1			1	
Elementary and junior high school	1.34	(1.11-1.61)	0.00	1.16	(1.05-1.26)	0.00
No education	1.81	(1.16- 2.85)	0.00	1.60	(1.19-2.14)	0.00
Woman's frequency of alcohol consumption						
Does not consume alcohol		1			1	
Occasionally	1.64	(1.42-1.88)	0.00	1.51	(1.40-1.63)	0.00
More than once a month	4.07	(3.76-4.40)	0.00	2.26	(1.91-2.67)	0.00
Work activity						
Housewife		1			1	
Works outside the home	1.65	(1.34-2.04)	0.00	1.24	(1.14-1.35)	0.00
History of childhood abuse						
Was not physically abused		1			1	
Occasionally	1.68	(1.57-1.81)	0.00	1.81	(1.79-1.84)	0.00
Several times and almost always	4.18	(3.50-4.99)	0.00	2.43	(2.29-2.57)	0.00
Income (multiple of minimum monthly wage)‡						
≥5		1			1	
2 to <5	1.32	(0.90-1.92)	0.15	1.27	(0.95-1.68)	0.10
1 to <2	1.99	(1.39-2.83)	0.00	2.03	(1.51-2.72	0.00
No salary	0.88	(0.62-1.25)	0.48	1.37	(1.003-1.87)	0.05
Partner's characteristics						
Education						
High school and more		1			1	
Elementary and junior high school	1.67	(1.60-1.74)	0.00	1.58	(1.44-1.72)	0.00
No education	1.91	(1.55-2.36)	0.00	1.90	(1.61-2.26)	0.00
Work activity						
Employee§		1			1	
Self-employed	1.13	(0.99-1.30)	0.07	1.17	(1.10-1.23)	0.00
Fieldworker or mason's assistant	1.25	(0.97-1.62)	0.08	1.33	(1.78-1.50)	0.00
Student	1.87	(1.69-2.06)	0.00	1.54	(0.74-3.18)	0.25
Unemployed	1.50	(1.17-1.92)	0.00	1.16	(1.02-1.34)	0.03
Income (multiple of monthly salary)‡						
≥5		1			1	
2 to <5	1.41	(1.12-1.77)	0.00	1.18	(0.37-1.67)	0.36
0 to <2	1.60	(1.19-2.15)	0.00	1.35	(0.83-2.18)	0.22
Partner's frequency of alcohol consumption						
No alcohol consumption		1			1	
Occasionally	1.52	(1.09-2.13)	0.00	1.39	(1.22-1.58)	0.00
1-3 times per month	3.54	(2.70-4.65)	0.00	2.24	(1.96-2.57)	0.00
1-3 times per week	6.56	(5.25-8.21)	0.00	2.39	(2.06-2.78)	0.00
Every day or almost every day	10.50	(9.24-11.93)	0.00	2.58	(1.93-3.46)	0.00
Others						
Number of children in the household						
0		1			1	
1	0.85	(0.80-0.91)	0.07	0.94	(0.85-1.02)	0.17
≥2	1.06	(0.99-1.15)	0.00	0.90	(0.86-0.95)	0.00
Household asset index						
High		1			1	
Medium	1.39	(1.26-1.54)	0.00	1.34	(1.15-1.56)	0.00
Low	1.57	(1.16-2.14)	0.00	1.42	(1.19-1.69)	0.00

* Women who were victims of severe or non-severe violence inflicted by their partners are compared with women who experienced no violence (N=13,714).
† The analysis was carried out adjusting by stratum. Confidence intervals to 95% were calculated with robust standard errors adjusted by "cluster" (institution).
‡ The minimum daily pay a worker must receive by law.[16] The minimum wage during 2003 was the equivalent of C$5.01. Exchange rate: C$1 = 8.69 pesos, 2003.
§ Employees included teachers, office employees and manual labourers.

modifiers and were kept if p<0.05.[18] The model's global adjustment was verified with Pearson's goodness-of-fit test and was considered to have adequate adjustment with a value of p>0.10.[18] In both bivariate and multivariate analysis, the confidence intervals were calculated with a robust standard error.[19] Continuous variables were evaluated by observing whether the change in the logit of the dependent variable had the same magnitude when there were increases of one unit in the independent variable (Box-Tidwell test).[18,20] Since this test was rejected, these variables became categories when they were incorporated in the model.

Differences among variable categories were evaluated to determine statistical differences. Thus, when the statistics showed no differences (lincom test p>0.10),[18] the categories were collapsed. The statistical packages used were Stata version 8.2 (Stata Corp., College Station, TX) and SPSS version 10 (SPSS, Chicago, IL).

RESULTS

Women's socio-demographic characteristics

This study included 18,902 women. The mean subject age was 35.3 ±12 years. About 8.6% had not attended school, 69.1% had had schooling at the elementary and junior high levels. Housewives constituted 51% of the sample; 87.7% of the subjects lived in urban areas, and 74% of all participants had no salary. Almost 96% did not drink alcohol or did so occasionally (Table 1).

Table 3. Multivariate Model of Independent Factors Associated with Partner Abuse, Mexico

Variable	Severe Violence* N=1,017		p	Non-severe Violence* N=2,242		p
Women's characteristics	OR	CI 95%†		OR	CI 95%†	
Age (years)						
≥55	1			1		
45-54	1.31	(0.94-1.82)	0.11	0.93	(0.79-1.12)	0.44
35-44	1.51	(1.35-1.7)	0.00	0.96	(0.75-1.24)	0.78
25-34	1.53	(1.17-1.99)	0.00	0.96	(0.67-1.37)	0.82
15-24	1.49	(1.01-2.21)	0.05	1.01	(0.66-1.55)	0.94
Education						
High school and more	1			1		
Elementary and junior high school	1.15	(0.80-1.65)	0.45	0.96	(0.78-1.17)	0.68
No education	1.51	(1.00-2.30)	0.05	1.35	(1.16-1.56)	0.00
Women's frequency of alcohol consumption						
No alcohol consumption	1			1		
Occasionally	1.48	(1.34-1.65)	0.00	1.43	(1.28-1.59)	0.00
More than once a month	2.51	(1.62-3.90)	0.00	1.60	(1.51-1.69)	0.00
Work activity						
Housewife	1			1		
Works outside the home	1.30	(0.99-1.72)	0.06	1.10	(1.00-1.21)	0.04
History of childhood abuse						
Was not physically abused	1			1		
Occasionally	1.60	(1.56-1.65)	0.00	1.65	(1.56-1.75)	0.00
Several times and almost always	3.70	(3.03-4.52)	0.00	2.19	(2.07-2.31)	0.00
Partner's characteristics						
Education						
High school and more	1			1		
Elementary and junior high school	1.37	(0.85-2.18)	0.19	1.36	(1.25-1.47)	0.00
No education	1.48	(0.79-2.77)	0.22	1.54	(1.35-1.76)	0.00
Income (multiple of minimum monthly wage)‡						
≥5	1			1		
2 to <5	1.01	(0.76-1.35)	0.93	1.18	(0.93-1.49)	0.18
0 to <2	1.13	(0.91-1.41)	0.27	1.29	(1.02-1.63)	0.00
Partner's frequency of alcohol consumption						
No alcohol consumption	1			1		
Occasionally	1.77	(1.62-1.93)	0.00	1.29	(1.09-1.53)	0.00
1-3 times per month	4.00	(3.74-4.28)	0.00	1.95	(1.59-2.38)	0.00
1-3 times per week	6.85	(6.29-7.47)	0.00	2.17	(1.74-2.71)	0.00
Every day or almost every day	14.77	(13.25-16.46)	0.00	3.04	(2.75-3.36)	0.00
Others						
Number of children in the household						
0	1			1		
1	1.14	(1.04-1.24)	0.00	1.18	(1.10-1.26)	0.00
≥2	1.44	(1.18-1.77)	0.00	1.20	(1.04-1.39)	0.01
Household asset index						
High	1			1		
Medium	1.32	(1.02-1.18)	0.04	1.18	(0.89-1.57)	0.24
Low	1.15	(1.14-1.72)	0.00	1.31	(1.05-1.62)	0.01

Goodness of fit test=0.75
* Women who were victims of severe or non-severe violence inflicted by their partners are compared with women who experienced no violence (N =13,714).
† The analysis was carried out adjusting by stratum. Confidence intervals to 95% were calculated with robust standard errors adjusted by "cluster" (institution).
‡ The minimum daily pay a worker must receive by law.[16] The minimum wage during 2003 was the equivalent of C$5.01. Exchange rate: C$1 = 8.69 pesos, 2003.

Partners' characteristics

Intimate partner's mean age was 38.9 ±13 years; 7.6% had not attended school, and 62.8% had completed elementary and junior high school. Most of the partners (59%) were employees or factory workers. Women reported that 18.3% of their partners drank alcohol more than once a week (Table 2).

Women's history of violence during childhood

Almost 22% of subjects indicated that their parents or relatives had humiliated or insulted them, and 43.2% of these also reported physical abuse. Around 25% reported that the blows and humiliations were infrequent, 9.7% said this occurred several times, and 9% reported physical strikes and humiliations happening almost all the time.

Severity of intimate partner abuse

Using the SIPAI, we found that 72.6% reported no abuse, 18.1% had experienced non-severe abuse, and 9.3% had been victims of severe partner abuse during the previous 12 months.

Table 2 presents the unadjusted models. The women's variables associated with partner abuse corresponded mostly to being under 55 years of age, having a lower level of education, a higher frequency of alcohol consumption, working out of the home and having a history of childhood abuse. The partner's characteristics relating to severity of abuse were lower education, lower income and greater frequency of alcohol consumption. Other variables associated were the Index of Household Assets and the (greater) number of children in the household.

Multivariate model of severity of intimate partner abuse

Table 3 presents the final multivariate model which shows that age was only significantly related to violence when violence was severe. The age group 25 to 34 showed the highest risk of severe violence (OR 1.53, 95% CI 1.17-1.99). A woman's lack of education was associated with the possibility of being abused; this risk was 51% for severe (OR 1.51, 95% CI 1.00-2.30) and 35% (OR 1.35, 95% CI 1.16-1.56) for non-severe violence.

Women working out of the home had a 30% greater possibility of being the victims of severe violence (OR 1.3, 95% CI 0.99-1.72).

Appendix 1. Factorial Matrix of the Violence Index with Varimax Rotation

	Factor I Psychological Violence	Factor II Physical Violence	Factor III Severe Physical Violence	Factor IV Sexual/economic Violence
1. Has he insulted you?	0.791	0.247	0.061	0.218
2. Has he belittled or berated you?	0.787	0.200	0.090	0.226
3. Does he berate or humiliate you in front of other people?	0.782	0.195	0.105	0.223
4. Has he said things to you as if you are unattractive or ugly?	0.692	0.165	0.150	0.224
5. Has he become jealous or suspicious of your friendships?	0.682	0.150	0.060	0.205
6. Has he hit or kicked the wall or any other piece of furniture?*	0.583	0.461	0.132	0.111
7. Has he threatened to hit you?*	0.568	0.543	0.140	0.230
8. Has he destroyed any of your belongings?*	0.532	0.506	0.198	0.122
9. Has he made you feel afraid of him?*	0.520	0.490	0.147	0.267
10. Has he hit you with his hand or fist?	0.310	0.731	0.153	0.327
11. Has he shaken or pushed you?	0.371	0.721	0.110	0.297
12. Has he twisted your arm?	0.212	0.693	0.232	0.235
13. Has he kicked you?	0.181	0.690	0.285	0.305
14. Has he pushed you on purpose?	0.363	0.669	0.145	0.248
15. Has he hit you with any kind of stick or belt or any domestic object?*	0.096	0.515	0.438	0.289
16. Has he threatened to kill you, himself or the children?*	0.394	0.432	0.336	0.186
17. Has he shot you with a gun or rifle?	0.053	0.007	0.810	0.140
18. Has he attacked you with a razor, knife or machete?	0.034	0.209	0.738	0.176
19. Has he burned you with a cigarette or any other substance?	0.007	0.096	0.727	0.217
20. Has he threatened you with any kind of gun or rifle?	0.303	0.161	0.632	-0.110
21. Has he threatened you with any kind of razor, knife or machete?	0.276	0.359	0.598	-0.004
22. Has he tried to choke or suffocate you?	0.068	0.340	0.535	0.351
23. Has he demanded that you have sexual relations with him?	0.288	0.283	0.112	0.723
24. Has he used physical force to have sexual relations with you?	0.202	0.333	0.183	0.688
25. Has he threatened to go out with other women if you do not consent to having sexual relations with him?	0.356	0.248	0.101	0.665
26. Has he controlled you by not giving you money or by taking it away from you?*	0.356	0.248	0.101	0.581
27. Has he taken away or made use of your belongings against your will?*	0.372	0.214	0.142	0.550
% of variance explained	**19.46%**	**17.73%**	**13.22%**	**11.95%**

* These items were not included in the Index.

Two or more children increased the possibility of severe violence by 44% (OR 1.44, 95% CI 1.18-1.77), and for non-severe violence the possibility was 20%. In all cases, the category of comparison was homes with no children.

When women's reported alcohol consumption was in excess of once a month, the possibility of severe violence increased 2.5 times (OR 2.51, 95% CI 1.62-3.90) and of non-severe violence by 60%, compared with those who abstained.

A history of childhood abuse was more strongly associated with severe violence. The possibility of experiencing severe partner abuse more than tripled among women who reported exposure to abuse as occuring several times and almost all the time during their childhood (OR 3.7, 95% CI 3.03-4.52); this association more than doubled (OR 2.19, 95% CI 2.07-2.31) when the violence was not severe.

With respect to the partner's variables, the most important predictor of the severity of violence was the frequency of the man's alcohol consumption. Adjusting for the other variables, partners who consumed alcohol almost every day had an over 14 times higher possibility (OR 14.77, 95% CI 13.25-16.46) of being severe aggressors. A clear gradient was observed: as frequency of alcohol consumption decreased, so did the probability of being an aggressor. Other variables associated with severity of IPA were lower education and income. Therefore, less education and lower income had a higher association with non-severe violence, at 54% and 29%, respectively.

DISCUSSION

Among the study's most relevant aspects was the creation of the SIPAI index, which allows analysis of the results on the basis of the severity of IPA. With it, factors associated not only with violence but also with the severity of the violence can be identified. In this context, it is important to reconsider those factors associated with severe partner abuse: women of reproductive age, women with a history of childhood violence, and frequent alcohol consumption by both partners. The variable "man's frequency of alcohol consumption" should be highlighted, since it was the most important factor associated with severe partner violence. The association between violence and alcohol intake has been broadly studied,[21-23] and in spite of existing controversies regarding the way in which frequency and excessive alcohol consumption may trigger violent episodes, it is true that greater alcohol consumption in abusive men increases their risk of becoming more violent.

The association between history of abuse during childhood and abuse from the partner is sufficiently documented. In a broad review of the literature, Black et al.[24] described how a history of violence in the family of origin, in men as well as women, can be conducive to increased violence in couples.

Women with low education and low socio-economic status were at greater risk of suffering violence; these findings agree with other studies reporting that women who live in situations of poverty are the most vulnerable.[25]

Of special interest is the greater risk of exposure to IPV in women working out of the home. Several authors report that the effect of this variable on IPA will depend upon the socio-cultural context.[26,27] Therefore, in the context of a very rigid gender role, perception of a salary by a woman constitutes a risk factor for increased violence.[26] The finding suggests the need for a more detailed study of this relation.

Undoubtedly, one contribution of the SIPAI is the possibility of identifying differentiated risks for severe and non-severe violence among women according to their characteristics, those of their partners and of their environment. Identifying victims of violence in conjunction with the severity of the violence can be useful in designing violence prevention programs and health care models.[28,29]

Finally, this study has some important limitations that should be taken into account when interpreting the data: on 23% of sub-

jects (n=4,445) there were incomplete data and the women were not included in the analysis; they were significantly older, had lower education, higher alcohol consumption, worked out of the home, and were exposed to a high degree of childhood abuse. We can infer that these subjects were at higher risk of IPA, which suggests that our reported findings are somewhat conservative.

In this study, only recipients of public health services were included, for which we may expect biases. Women in extreme poverty face more barriers to access health services in general,[30] and those with higher income are less interested in using public medical services;[30] for these reasons, these groups are under-represented.

The study was cross-sectional, which presents a problem of temporal ambiguity; for this reason, only statistical associations may be established and not causality.

It is important to further explore factors linked to the severity of partner abuse, not only in Mexico but elsewhere. Enhanced knowledge about this topic would help identify individuals whose physical and emotional integrity are at greater risk of suffering irreversible injury and would allow the government to focus resources and actions on this vulnerable sector of the population.

REFERENCES

1. Ramírez-Rodríguez J. La violencia de varones contra sus parejas heterosexuales: realidades y desafíos. Un recuento de la producción mexicana. *Salud Pública Mex* 2006;48(Suppl 2):S315-S327.
2. Instituto Nacional de salud Pública de México, ENVIM. Encuesta Nacional sobre Violencia contra las Mujeres, 2003;67.
3. Bullock L, McFarlane J, Bateman LH, Miller V. The prevalence and characteristics of battered women in a primary care setting. *Nurse Pract* 1989;14:47-55.
4. Elliot BA, Johnson MM. Domestic violence in a primary care setting. *Arch Fam Med* 1995;4:113-19.
5. Castro R, Ruiz A. Prevalence and severity of domestic violence among pregnant women, Mexico. *Rev Saúde Pública* 2004;38:62-70.
6. McCauley J, Kern D, Kolodner K, Derogatis L, Bass E. Relation of low-severity violence to women's health. *J Gen Intern Med* 1998;13:687-91.
7. Mullen PE, Romans-Clarkson SE, Walton VA, Herbison GP. Impact of sexual and physical violence on women's mental health. *Lancet* 1988;12:51-59.
8. Olaíz G, Franco A, Palma O, Echarri C, Valdez-Santiago R, Herrera C. Diseño metodológico de la Encuesta Nacional sobre Violencia contra las Mujeres en México. *Salud Pública Mex* 2006;48:S328-S335.
9. Instituto Nacional de Estadística, Geografía e Informática. Distribución porcentual de la población usuaria de servicios de salud según tipo de institución para cada sexo y grupo de edad, 2000. México D.F.: INEGI. Available at: http://www.inegi.gob.mx/est/contenidos/español/rutinas/eptasp?l=msa102&c=3351 (Accessed September 20, 2007).
10. Valdez-Santiago R, Sanín-Aguirre LH. La violencia doméstica durante el embarazo y su relación con el peso al nacer. *Salud Pública Mex* 1996;38:352-62.
11. Castro R, Peek-Asa C, Ruiz A. Violence against women in México: A study of abuse before and during pregnancy. *Am J Public Health* 2003;93:1110-16.
12. Hudson W, Mclntosh S. The assessment of spouse abuse: Two quantifiable dimensions. *J Marriage Fam* 1981;43:873-85.
13. Marshall L. Development of the Severity of Violence against Women Scales. *J Fam Violence* 1992;7:103-21.
14. Valdez R, Híjar M, Salgado N, Rivera L, Avila-Burgos L, Olaíz G. Escala de violencia e índice de severidad: una propuesta metodológica para la medición de la violencia de pareja en mujeres mexicanas. *Salud Pública Mex* 2006;48:S221-S232.
15. Bustillos-Domínguez MD, Sanín-Aguirre LH, Valdez-Santiago R, Harlow S. Violencia doméstica y su impacto en mujeres de la industria maquiladora en Chihuahua. *Genero Salud Cifras* 2006;4:8-15.
16. National Commission of Minimum Salaries, Mexico. General Minimum Wage Scales and Professionals. Available at: http://www.conasami.gob.mx (Accessed October 20, 2007).
17. Banco de Mexico. Mercado Cambiario. Paridad mexican peso-canadian dolar. Tasa diciembre 2003. Available at: http://www.banxico.org.mx/Portales Especializados/tiposCambio/TiposCambio.html (Accessed November 20, 2009).
18. Hosmer D, Lemeshow S. *Applied Logistic Regression,* 2nd Ed. New York: John Wiley and Sons, 2000.
19. Williams RL. A note on robust variance estimation for cluster-correlated data. *Biometrics* 2000;56:645-46.
20. Bagley SC, White H, Golomb BA. Logistic regression in the medical literature: Standards for use and reporting, with particular attention to one medical domain. *J Clin Epidemiol* 2001;54:979-85.
21. Irons R, Schneider JP. When is domestic violence a hidden face of the addictions? *J Psychoactive Drugs* 1997;29:337-44.
22. Atwood JD, Randall T. Domestic violence: The role of alcohol. *JAMA* 1991;265:460-61.
23. Weinsheimer RL, Schermer CR, Malcoe LH, Balduf LM, Bloomfield LA. Severe intimate partner violence and alcohol use among female trauma patients. *J Trauma* 2005;58:22-29.
24. Black DA, Schumacher JA, Smith AM, Heyman RE. Partner, child abuse risk factor literature review: National Network on Family Resiliency, National Network for Health; 1999. Available at: www.nnh.org/risk (Accessed January 5, 2008).
25. González de Olarte E, Gavilano Llosa P. Does poverty cause domestic violence? Some answers from Lima. In: Morrison AR, Biehl ML (Eds.), *Too Close to Home: Domestic Violence in the Americas.* Washington, DC: Inter-American Development Bank, 1999;35-49.
26. Pires AF, Chaiber LB, Junior IF, Portella AP, Diniz CS, Couto MT, et al. Factors associated with intimate partner violence against Brazilian women. *Rev Saúde Pública* 2009;43:1-11.
27. Koenig MA, Ahmed S, Hossain MB, Mozumder ABMKA. Women's status and domestic violence in rural Bangladesh: Individual- and community-level effects. *Demography* 2003;40:269-88.
28. Secretaría de Salud. Centro Nacional de Equidad de Género y Salud Reproductiva. *Modelo Integrado para la Prevención y Atención de la Violencia Familiar y Sexual: Manual Operativo.* México, D.F., 2004.
29. Morrison A, Ellsberg M, Bott S. Addressing gender-based violence in the Latin American and Caribbean Region: A critical review of interventions. World Bank Policy Research Working Paper 3438. October 2004.
30. Valencia-Mendoza A, Bertozzi S. A predictive model of the utilization of curative ambulatory health services in Mexico. *Salud Pública Mex* 2008;50:397-407.

RÉSUMÉ

Objectif : Déceler les facteurs associés à la gravité de la violence envers les partenaires intimes (VPI) au Mexique.

Méthode : Nos données proviennent de l'enquête mexicaine sur la violence envers les femmes (novembre 2002 à novembre 2003), une étude nationale menée auprès de 18 902 femmes de plus de 14 ans. Les sujets recevaient des services de santé de l'État. La gravité de la VPI a été mesurée selon un barème de 27 points. Nous avons effectué des analyses bivariées et multivariées pour approfondir les facteurs significatifs associés à la violence conjugale.

Résultats : Une participante sur quatre a dit être victime de VPI. Notre modèle montre que les femmes plus jeunes et moins instruites présentaient un risque plus élevé de VPI. Le travail à l'extérieur de la maison (RC [rapport de cotes] de 1,3, intervalle de confiance [IC] de 95 % = 0,99-1,72), la présence de deux enfants ou plus dans le ménage (RC de 1,44, IC = 1,18-1,77), la consommation d'alcool (RC de 2,51, IC = 1,63-3,90) et les antécédents de violence durant l'enfance (RC de 3,7, IC = 3,03-4,52) augmentaient la possibilité de violence grave. La plus importante variable prédictive de VPI grave était la consommation d'alcool du partenaire (quotidienne ou quasi quotidienne, RC de 14,7, IC de 95 % = 13,25-16,46).

Conclusion : La sensibilisation aux facteurs de risque associés à la VPI contribuera à cerner les populations qui courent un plus grand risque de subir des blessures graves et pourrait amener le secteur de la santé à cibler directement cette population vulnérable.

Mots clés : violence conjugale; gravité; violence; enquête nationale; Mexique