

## Original Article

## A Study on Direct Costs of Domestic Violence Against Women in Legal Medicine Centers of Tehran (2002)

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**Background:** Domestic violence is exceedingly prevalent and is recognized as a health priority by World Health Organization. The prevalence of domestic violence against women has been the topic of a number of previous studies, very few of which have looked into direct and/or indirect costs it imposes on the victim and the state. The current study seeks to determine the direct costs looking into the wife abuse files in Legal Medicine Centers of Tehran.

**Methods:** This was a descriptive cross sectional study. Based on Legal Medicine Organization's report on the number of annual visits and proportion of spouse abuse cases in the five centers of Tehran, a sample size of 225 was calculated. A questionnaire was developed to gather information, which was then utilized to estimate the direct costs that domestic violence (against women) imposed on the victims. The figure would mirror all expenses on medical services, legal-judiciary follow up, commuting, and any sundry charges.

**Results:** The subjects had spent, on average, \$66.8<sup>†</sup> for healthcare services (including \$12.8 for visits, \$12.02 for prescribed drugs, \$16.5 for radiologic studies, and \$25.5 for laboratory tests). Given the estimated number of 9,050 female victims attending Legal Medicine Organization (during the study period, the total medical service expenses approach \$142210.6. In 2002, related legal services expenses (as charged by the police force) were \$741996.3. In the same year, the sundry charges were \$163052.1. The estimated total costs sums up as high as \$1047259.

**Conclusion:** The calculated figure only reflects expenses of first-time visits and what was spent before attending Legal Medicine Centers. Were additional visits and related expenses taken into account, a more precise estimate would have been produced. Nonetheless, the current figure well indicates high expenses of domestic violence on the state and the nation.

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### Introduction

Prevalence of domestic violence against women surpasses all cultural, social, economic, educational, ethnical, and age boundaries. Despite the protective legislations against domestic violence in several states, women

are still being abused. Cultural mores, social norms, and religious beliefs among other factors have veiled the domestic violence phenomenon.<sup>1</sup>

Few accurate statistics exist in this area given the fact that the police and judiciary systems do not well recognize intimate partner abuse inside families.<sup>2</sup>

Violence against women is an incident in which females are abused by the opposite gender. The term domestic violence is applied if this takes place within a family between spouses.<sup>3</sup>

Domestic violence, though not well appreciated, is associated with a number of physical, psychological, and social complications.

World Health Organization (WHO) has recognized domestic violence against women a health priority. Some statistics released by this

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organization show that more than 20% of women in the world have experienced at least one episode of physical violence by men.<sup>3</sup> Scores of women are regularly subjected to physical violence by men.<sup>3</sup>

Health complications of domestic violence against women range from minimal injuries to life maim and chronic psychological problems. HIV infection and suicide attempts are among the most severe complications.<sup>4</sup>

Several authors have studied the prevalence and incidence of domestic violence in different nations. However, a small number of studies have looked into the financial consequences of the problem. Besides, no adequate model exists to estimate all costs imposed by domestic violence.<sup>5</sup> Imprecision in description and women's concealment have veiled domestic violence. Therefore, it is impossible to accurately measure its dimensions and implicated costs. Financial burdens of children's care and custody, psychological problems, legal proceedings and detainment are also relevant and should be considered along with physical harms and healthcare expenses.<sup>6</sup>

Meyer conducted a study in the Rush Medical Center in Chicago in 1992. He estimated the expenses of healthcare delivery to domestic violence victims at 1633 dollars per person-year.<sup>8</sup> In 1991, Gelles and Murray estimated that domestic violence had imposed 5 to 10 billion dollars on American Society.<sup>9</sup>

None of the few authors who have studied the domestic violence against Iranian women looked into the direct costs it imposed on the victims and the state.<sup>10, 11</sup> The current study was therefore designed to determine the direct costs imposed on female victims of domestic violence who had attended the Legal Medicine Organization (LMO) of Tehran during a 2-year period. The study is hoped to urge the authorities to take appropriate preventive measures.

## Materials and Methods

This is a descriptive cross sectional study. The study population consisted of women abused by their husbands who attended one of the LMOs in Tehran for the first time.

The pretest stage was conducted in December 2001 using a preliminary questionnaire, which contained 20 questions. The pretest questionnaire was then reviewed; the external validity and comprehensibility of the questions were examined and vague questions were excluded. In the pretest

stage, a list of all people attending LMOs, their age and education, reason for their referral, and the referring center was prepared. The list revealed that 18% of LMOs' clients were female victims of domestic violence.

Based on the mentioned figures and with 5% accuracy the sample size was estimated 225.

The preliminary questionnaire was then reviewed and amended and final copies were completed in each of the five LMOs.

Field activities commenced between February to March 2002 in the five (North, South, West, East, and Central) LMOs of Tehran. Unequal numbers of domestic violence victims had attended the five centers. The "proportionate sampling method" was employed (based on the number of victims who attended in each LMOs in 2001). Accordingly, in centers with lower proportions of victims, smaller number of questionnaires were completed. That is 21, 66, 33, 60, and 45 questionnaires were filled in the North, South, East, West, and central LMO, respectively.

The completed questionnaires and the results of interviews with the victims were then collected and analyzed. Cooperation of physicians in the LMOs was an essential part in the process because disclosure of the "trauma assessment and treatment certificates" (based on procedures conducted to assess and report traumas to the court) was prohibited.

Calculation of the direct costs was based on visit charges in different departments of the Legal Medicine Organization and average wage of the police force and legislative body's employees.

## Ethical concerns

Informed consents were obtained from all participants before gathering the data. The gathered information was fully confidential and used just in line with the research goals. The research results were anticipated to be of immediate use and benefit. The research results were planned to be made available to the stakeholders.

## Data analysis

It is notable that a combined incidence- and prevalence-based approach was employed to estimate the expenses.

The "analysis unit" was the female victims (of domestic violence) who had attended one of the five LMOs of Tehran for the first time. The number of attendance by each victim was thus not

taken into consideration (prevalence approach). Only the first time visit charges were taken into account (incidence approach).

### Methods of cost calculation

Development of a model to estimate direct costs of domestic violence hinges on knowledge of number of women affected, number of victims seeking the services, proportion of services utilized, and the fare for each service.

The costs of services delivered to the victims were typically calculated after determining the portion of these services;

$$TC_{dv} = \sum P_i C_i$$

$TC_{dv}$  = total direct costs of domestic violence against women (LMOs of Tehran);

$P_i$  = Proportion of persons receiving the service;

$C_i$  = Cost of delivering the service to the victim.

An estimation of the annual number of women seeking legislative protection against abuse by their spouses was a requisite to calculating  $P_i$ . The statistics released by the Public Relations Department of Legal Medicine Organization revealed that in years 2000 and 2001, 52,925 and 47,616 women had been registered in Tehran's LMOs respectively. This means that, on average, 50,270 women have had recourse to legal medicine centers of Tehran each year.

Nearly 18% of the female clients had recourse to LMOs on domestic violence grounds. Therefore, the likely annual number of domestic violence victims was estimated around 9,050, which was considered as  $P_i$  for the year 2002.

An accurate estimate of  $C_i P_i$  was made through the following steps:

- The average expenses on the population sample were first calculated.
- The proportion of women victimized by their intimate partners was multiplied by the mean number of annual visits to the five LMOs of Tehran (9050 women) to calculate  $P_i$ .
- The total cost was then derived multiplying the mean costs in the population sample by  $P_i$ .
- Determination of medical costs, victims' payment on laboratory, and imaging services was taken into account. For those who had insurance, the franchise personal payments were considered.
- The calculated costs were then changed into US dollar in order to make them comparable with other international studies. Based on the Purchasing Power Parity, the exchange rate was set at 1963 Rls / US\$ 1 for 2002.<sup>12</sup>

## Results

Mean age of respondents was  $30.6 \pm 8.9$  years (Table 1). Twenty-eight percent of these women were in employment. About 16.4% of these victims had university degrees and only 3.6% of them were illiterate (Table 2).

The main physical injuries were bruising, fractures, ruptures, internal organ injuries, and abortion. More than 81% of victims had more than one injury.

Direct costs of domestic violence include the price of goods and services for the treatment of domestic violence. For the purpose of the current study the following list of expenses was applicable:

- Costs of medical care services (medical counseling, emergency care services, hospitalization, ...).
- Costs of legal-judicial measures (police, court, prison and detainment, and family counseling).
- Other costs (commuting, petition filing, stamp affixing, and ambulance).

### Costs of medical services

#### Cost of office visits

All 225 subjects of the study had consulted a doctor at least once. 76.9% of the women had one visit, 22.7% had two visits and 0.4% of them had three visits. Total expenses of medical consulting were \$2883.3. Physician's office visit cost per victim was  $\$12.8 \pm 3.4$  (mean  $\pm$  SD).

As all victims had at least one office visit, therefore the  $P_i$  and  $P_i C_i$  were estimated at 9,050 and \$115972.7, respectively (Table 3).

#### Cost of medications

Another direct expense of physical abuse of spouse is medications. Nineteen women (8.4%) had filled prescriptions as part of their treatment.

**Table 1.** Age distribution of female victims of domestic violence attending the five Legal Medicine Centers (LMCs) of Tehran, 2002

Age group (years)	No.	Percentage	Cumulative (%)
$\leq 19$	9	4.0	4.0
20 – 24	65	28.9	32.5
25 – 29	35	15.6	48.5
30 – 34	45	20.0	68.5
35 – 39	37	16.4	84.5
40 – 44	17	7.5	92.4
45 – 49	11	4.9	97.3
50 – 54	6	2.7	100.0

**Table 2.** Distribution of educational levels of female victims of domestic violence attending Tehran's LMCs in 2002.

Education level	Number (%)	Cumulative (%)
Illiterate	8 (3.6)	3.6
Primary school	21 (9.4)	13.0
Guidance school	27 (12.0)	25.1
High school	16 (7.1)	32.3
High school diploma	93 (41.3)	74.0
Technical school diploma	21 (9.3)	83.4
Bachelor	31 (13.8)	97.3
Master	5 (2.2)	99.6
Doctorate	1 (0.4)	100.0
No response	2 (0.9)	—
<b>Sum</b>	<b>225 (100.0)</b>	

Total expense of medications on these women was \$228.4. The mean cost of medication per victim was \$12.02. Therefore, PiCi (according to  $Pi = 0.84 \times 9050 = 764$ ) was estimated roughly at \$9183.2.

### Cost of legal-judicial proceedings

We received no response in our correspondences from the police and judicial departments to determine costs of related proceedings. Court fees were therefore estimated based on the average payments to the officers who normally attend a session of court (including a judge, one secretary, and an employee). An average of \$62.4 per hour was calculated for each court session. The cost of police services was estimated to be half of this figure (\$31.2). On the whole, 132 victims of the sample (58.7%) had used police services, which required 175.5 hours of staff work. Mean time was then  $1.44 \pm 1.33$  hours.

**Table 3.** Distribution of direct costs of domestic violence against women in the five Legal Medicine Centers of Tehran.

Service		Ci		Pi	
		Average charge for the service (US \$)	Proportion of victims receiving the service (%)	Number of victims annually receive the service	Annual figure spent for the service (US \$)
Medical	Healthcare staff visits	12.8	100	9050	115972.7
	Drug	12.02	8.4	764	9183.2
	Imaging	16.5	10.7	969	16034.7
	Laboratory	25.5	0.4	40	1020
	Sum	66.8			142210.6
Police and judicial	Police	41.5*	58.7	5312	220448
	Court	84.4*	68.0	6154	519397.6
	Counseling	10.7	2.22	201	2150.7
	Sum	136.6	—	—	741996.3
Sum	Others	18.01	100	9050	163052.1
<b>Total cost</b>	<b>—</b>	<b>221.41</b>	<b>—</b>	<b>—</b>	<b>1047259</b>

Of note, the above figures only mirror expenses on the first time recourse to LMCs; the figure would be higher were the calculated cost multiplied by the number of attending by each victim.

Simple calculations showed that average police service expense for each victim was \$41.5.

The number of intimate partner violence victims who had attended the civil court was 153 (68%), which required 207 hours of staff work (including the judge). So each court session had taken  $1.48 \pm 1.16$  hours on average. It was calculated that the expense of judiciary services on the subjects was \$84.4 per person.

The annual number of women abused by their partners who sought police and/or judicial services were estimated at 5312 and 6154, respectively. On average, such services could impose total costs as high as 220448 and 519397.6 US dollar on the victims, in the same order (Table 3).

Only five victims had attended counseling sessions. Total length of these sessions was 7 hours, which means that length per victim was 1.4 hours. Mean cost of the counseling services was 10.7 per person. A total \$2150.7 was the estimated figure of cost on these services for 201 ( $= 0.22 \times 9050$ ) victims.

### Other costs

Another group of direct costs imposed on the intimate partner violence victims included expenses such as commuting, writing petitions, affixing stamps etc. The total figure spent on such operations was \$4053.7. Cost per victim of these operations and total cost were around \$18.01 and \$163052.1, respectively (Table 3).

The above calculations have determined the direct costs of domestic violence only in some measure. The calculations included only expenses to the level of issuance of "trauma assessment and

treatment certificate". Determination of the expenses imposed on the victims who had further recourse to the police or judiciary system or had received further medical services warrants a longitudinal study.

## Discussion

The results of this study revealed that basic variables such as age, educational level, and employment status could impinge on social roles and were therefore important elements in domestic violence.

Similar to Abbot's findings in Colorado, most victims in the current study were of the 20 – 39 year age group.<sup>13</sup> This group seems to be the most active age group and accounts for the highest proportion of domestic violence victims, which can result in higher levels of economical, cultural, and social impairment.

In this study, 74% of women victimized by their intimate partners had low educational levels (high school or lower). Association of low educational level and intimate partner violence was previously reported by Coker et al.<sup>14</sup> In their study, 66% of such women were of low educational levels. Such findings underscore the role of education in empowering against domestic violence and promoting adequate social behavior.

Coker reported that women experiencing IPV expenditure on physician, drug and hospital divided by high and low IPV groups were about 2,776 and US\$ 407 (in average), respectively.<sup>14</sup> This figure in the current study was only \$12.5. Two explanations for such large difference are;

Only co-payments by the clients were applied in the calculations. The payments by insurance companies were not taken into account in the current study.

Medical care services in Iran, and medical counseling and medicine in particular, are fairly inexpensive.

The study results are indicative of huge economic burden of intimate partner violence on its victims. The figure is as high as \$1,047,259 per year and related for the most part to medical services and legal/judicial proceedings.

In 2005, the Iranian Office for Social Affairs of the Ministry of Interior conducted a study on married women residing in provincial capitals. The study showed that about 7% of women had suffered physical ailments due to domestic violence.<sup>15</sup> According to the Statistics Yearbook

total number of married women residing in urban areas was 7,529,550 in 2001.<sup>16</sup> The estimated number of women victimized by their partners is therefore 527069. Overlooking the inflation, the estimation of annual cost of intimate partner violence for such a large number of women will be as high as \$60969876.7, which urges for effective interventions.

Data shortage made production of exact figures impossible. However, the estimated figures presented here are hoped to be alarming enough to the policymakers in the health system to make effective legal interventions to reduce the phenomenon of spouse abuse and its complications.

The police and judiciary services (particularly judicial proceedings) accounted for the main part of direct costs of domestic violence. Were the costs calculated for all calls to LMOs, the different aspects of domestic violence would have been better elucidated for the whole nation.

The figures cited in the article only mirror expenses of initial services and first-time recourse to the LMOs. Given the fact that nearly 80% of the intimate partner violence victims had been abused more than once, more calls and costs were expectable. It is evident that more precise estimation could be made taking into account expenses of further visits to LMOs and/or other related organizations. It was noteworthy that counseling services had been delivered to only 2.2% of the victims. This urges for the development of such services in the police and judiciary systems.

To recapitulate, having considered the study protocol limitations (inaccessibility of the exact data) and the estimated costs for spouse abuse; the study results are strong enough to give reason for further studies in the area.

## Limitations

Despite the fact that most of intimate partner violence victims had recourse to LMOs in order to get the "trauma assessment and treatment certificates", selection faced the following limitations:

Many women abused by their spouses never seek legal support. This means that estimating the number of intimate partner violence cases only on the basis of number of recourses to the judiciary system is not completely satisfactory.

In our investigation, it was revealed that a small number of intimate partner violence victims

reached to a compromise with their husbands and did not pursue their lawsuit cases. Such women are never referred to an LMO.

This was a cross-sectional study and the intimate partner violence victims were not followed. The direct cost of intimate partner violence was therefore calculated up to the first attendance in an LMO. Costs related to healthcare services pending complete recovery and legal proceedings were not envisaged.

All these limitations suggest the likelihood of underestimating the direct costs of domestic violence against women.

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