

# Intimate partner violence among Egyptian pregnant women: incidence, risk factors, and adverse maternal and fetal outcomes

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## Summary

**Aims:** To assess incidence and risk factors of intimate partner violence (IPV) during pregnancy among a sample of women from Egypt and to evaluate its impact on maternal and fetal adverse health outcomes. **Materials and Methods:** After obtaining ethical approval, a total of 1,857 women aged 18 – 43 years completed the study and were investigated using an interview questionnaire. The questionnaire contains five main items: demographic characteristics of women, intimate partner characteristics, assessment of IPV during current pregnancy, and assessment of maternal as well as fetal/neonatal adverse outcomes. Women were also examined to detect signs of violence and identify injuries. **Results:** Exposure to IPV during pregnancy was reported among 44.1% of the studied women. Emotional violence was the most common form. Women exposed to violence were of younger age, higher parity, and lower educational level. Their partners were older, less educated, and more likely to be addicted to drugs and alcohol. Women were also found to have significantly higher incidence of adverse pregnancy outcomes (miscarriage, preterm labor, and premature rupture of membrane), and fetal/neonatal adverse outcomes (fetal distress, fetal death, and low birth weight). A total of 297 cases had been exposed to physical violence (15.9%) vs 32.6% and 10% exposed to emotional and sexual violence, respectively. The most common form of physical violence was kicking. **Conclusion:** Violence during pregnancy is prevalent among Egyptian women. Exposure to violence was a significant risk factor for multiple adverse maternal and fetal health outcomes.

**Key words:** Intimate partner violence; Domestic violence; Maternal adverse outcomes; Fetal adverse outcomes; Pregnancy.

## Introduction

Violence against women is the most widespread yet under-recognized human rights violation in the world [1]. It is an important global public health problem and particularly women of reproductive age [2, 3]. According to the United Nations Declaration on the Elimination of Violence Against Women of 1993, violence against women is defined as “any act of gender-based violence that results in, or is likely to result in, physical, sexual, or psychological harm or suffering to women, including threats of such acts, coercion, or arbitrary deprivation of liberty, whether occurring in public or private life” [4]. Violence can take many forms including psychological, physical, and sexual nature and it can occur within the context of family or even the general community [5]. The World Health Organization’s (WHO) 2002 World Report on Violence and Health defines intimate partner violence (IPV) as “any behavior within an intimate relationship that causes physical, psychological, or sexual harm to those in the relationship” [6].

Studies regarding violence against women in Egypt show that this problem is widespread. According to the Egyptian Demographic and Health Surveys (EDHS) conducted in 1995, about (32%) of women reported been beaten during pregnancy [7]. WHO 2001 review of national studies on

women subjected to physical violence by an intimate partner showed that 34.4% of Egyptian women have been subjected to this form of abuse [8].

The available reports about maternal and neonatal adverse outcomes due to violence during pregnancy are not conclusive. Some studies have shown positive associations between different forms of abuse and birth outcomes [9–12] but others did not [13–15]. The effect of violence on pregnancy is thought to be due to either direct (blow to the abdomen) or indirect (psycho-somatic consequences) mechanisms [16]. The understanding of close relationship between violence during pregnancy and adverse maternal and neonatal consequences could have important clinical and public health effects.

The current study aims to evaluate the incidence of violence during pregnancy among women in Ismailia city – North Eastern part of Egypt – and to evaluate the maternal, fetal, and neonatal health consequences associated with this problem.

## Materials and Methods

The study protocol runs in compliance with the Helsinki Declaration and approved by ethical committee of Suez Canal University Hospital (SCUH). This prospective cohort, hospital-based study was conducted among all pregnant women attending the Obstetrics

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Table 1. — Socio-demographic characteristics of the studied women classified by exposure to violence.

Women's characteristics		Exposed to violence (n=818) 44.1%	Not exposed to violence (n=1039) 55.9%	Total	OR (95%CI)
Age	18 –	206 (25.2%)	85 (8.2%)*	291 (15.7%)	3.8 (2.9 – 5.02)
	25 –	300 (36.7%)	234 (22.5%)*	534 (28.8%)	1.9 (1.6 – 2.5)
	30 –	280 (34.2%)	271 (26.1%)*	551 (29.6%)	1.5 (1.2 – 1.8)
	35 –	20 (2.4%)	278 (26.8%)*	298 (16.1%)	0.07 (0.04 – 0.1)
	40 – 43	12 (1.5%)	171 (16.4%)*	183 (9.8%)	0.08 (0.04 – 0.1)
GA	First trimester	371 (45.4%)	189 (18.2%)*	560 (30.2%)	3.7 (3.01 – 4.6)
	Second trimester	291 (35.5%)	307 (29.5%)*	598 (32.2%)	1.3 (1.08 – 1.6)
	Third trimester	156 (19.1%)	543 (52.3%)*	699 (37.6%)	0.2 (0.1 – 0.3)
Marital status	Divorced	100 (12.2%)	34 (3.3%)*	134 (7.2%)	4.1 (2.7 – 6.3)
	Married	718 (87.8%)	1005 (96.7%)	1723 (92.8%)	
Parity	Nulliparous	118 (14.4%)	460 (44.3%)*	578 (31.1%)	0.2 (0.1 – 0.3)
	Para 1-2	409 (50%)	512 (49.3%)	921 (49.6%)	1.03 (0.9 – 1.2)
	≥ Para 3	291 (35.6%)	67 (6.4%)*	358 (19.3%)	8.01 (5.9 – 10.8)
Educational level	Illiterate	281 (34.4%)	108 (10.4%)*	389 (20.9%)	4.5 (3.5 – 5.8)
	< 12 years	306 (37.4%)	95 (9.1%)*	401 (21.6%)	5.9 (4.6 – 7.7)
	≥ 12 years	231 (28.2%)	836 (80.5%)*	1067 (57.5%)	0.09 (0.08 – 0.1)
Job (current/previous)	Housewife	595 (72.7%)	113 (10.9%)*	708 (38.1%)	21.8 (16.9 – 28.3)
	General worker	90 (11%)	76 (7.3%)*	166 (8.9%)	1.6 (1.1 – 2.2)
	Semi-professional	103 (12.6%)	550 (52.9%)*	653 (35.2%)	0.1 (0.09 – 0.2)
	Professional	30 (3.7%)	300 (28.9%)*	330 (17.8%)	0.09 (0.06 – 0.1)
Socio-economic status	Low	342 (41.8%)	241 (23.2%)*	583 (31.5%)	2.4 (1.9 – 2.9)
	Moderate	383 (46.8%)	731 (70.4%)*	1114 (59.9%)	0.4 (0.3 – 0.5)
	High	93 (11.4%)	67 (6.4%)*	160 (8.6%)	1.8 (1.3 – 2.6)
Duration of marriage	≤5 years	289 (35.3%)	403 (38.8%)	692 (37.3%)	0.9 (0.7 – 1.05)
	6 – 10	347 (42.4%)	444 (42.7%)	791 (42.6%)	0.9 (0.8 – 1.2)
	> 10	182 (22.3%)	192 (18.5%)*	374 (20.1%)	1.3 (0.9 – 1.6)
Pregnancy intent	Unwanted	296 (36.2%)	85 (8.2%)*	381 (20.5%)	6.4 (4.9 – 8.4)
	Wanted	522 (63.8%)	954 (91.8%)	1476 (79.5%)	
Smoking, addiction/alcohol	No	801 (97.9%)	1036 (99.7%)*	1837 (98.9%)	7.3 (2.1 – 39.1)
	Yes	17 (2.1%)	3 (0.3%)*	20 (1.1%)	

\*Statistically significant difference; OR: odds ratio; CI: confidence interval; GA: gestational age.

outpatient clinic of SCUH during any period of pregnancy. Women were followed up until delivery and for one month thereafter for assessment of neonatal outcome. The study was performed during the period from first of January 2010 until the end of December 2012. The study included only women with singleton pregnancy aged 18 – 43 years. Women were approached by members of the nursing staff in the clinic after reassuring them about the confidentiality of the study and the information it contains, then an informed written consent was obtained from all participants. A total of 2,193 women were recruited and a total of 1,857 completed the study. The least required sample size was calculated based on power of study of 80% and  $\alpha$  error of 0.05 [17].

The studied women were interviewed using a questionnaire that contained initially the demographic characteristics of women, intimate partner characteristics, and assessment of IPV during the current pregnancy. Data were then placed in a sealed envelope and kept in the records. The studied women were also examined to identify injuries and other signs of violence. Immediately after delivery, any adverse maternal or fetal outcomes are added to the questionnaire. Women were seen again at the end of puerperium and any adverse neonatal outcomes were recorded. Contact details including telephone numbers were obtained to communicate with the patients if they were lost at follow up.

WHO defined intimate partner as intimate partners who may or may not be cohabitating, and the relationship need not involve

sexual activities [18]. It includes current or former spouses (legal and common-law), and non-marital partners (boyfriend, girlfriend, same-sex partner, dating partner). In the current study and due to social considerations, intimate partner was defined as the current or ex-husband (whether women was married or divorced) and whether the women was living or used to live with him.

In the present study the authors used the NorVold Domestic Abuse Questionnaire (NORAQ) [19]. Arabic translation was used. The translation was based on the original NORAQ questionnaire and was validated before the study population was recruited. Validation was done to ensure that the questions were reliably conveyed to women and that they carried the intended meaning they were devised for. In addition, the questionnaire matched the Arabic validated version that was described by Haddad *et al.*, [20]. Original NORAQ measures four types of violence: emotional, physical, sexual, and abuse in healthcare system. All types were classified into three categories of severity (mild, moderate, and severe) except for sexual abuse that was classified into four categories: mild abuse (no genital contact), mild abuse (emotional/sexual humiliation), moderate abuse (genital contact), and severe abuse (penetration) [19]. Emotional violence included threats of harm and abandonment; intimidation; humiliation; insults and constant criticism; accusations; attribution of blame; ignoring, giving insufficient attention or ridiculing the victim's needs; controlling what the victim can or cannot do; withholding

Table 2. — *Socio-demographic characteristics of the intimate partners classified by commission of violence.*

Intimate partner's characteristics		Commit violence against wives	Don't commit violence against wives	Total	OR (95%CI)
Age difference	< 5 years	386 (47.2%)	469 (45.1%)	855 (46.1%)	1.09 (0.9 – 1.3)
	5 – 10 years	283 (34.6%)	513 (49.4%)*	796 (42.8%)	0.5 (0.4 – 0.7)
	> 10 years	149 (18.2%)	57 (5.5%)*	206 (11.1%)	3.8 (2.8 – 5.4)
Educational level	Illiterate	197 (24.1%)	78 (7.5%)*	275 (14.8%)	3.9 (2.9 – 5.2)
	< 12 years	438 (53.5%)	261 (25.1%)*	699 (37.6%)	3.4 (2.8 – 4.2)
	≥ 12 years	183 (22.4%)	700 (67.4%)*	883 (47.6%)	0.13 (0.11 – 0.2)
Job (current/previous)	General worker	308 (37.7%)	223 (21.5%)*	531 (28.6%)	2.2 (1.8 – 2.7)
	Semi-professional	291 (35.6%)	498 (47.9%)*	789 (42.5%)	0.6 (0.4 – 0.7)
	Professional	219 (26.7%)	318 (30.6%)	537 (28.9%)	0.8 (0.6 – 0.3)
Smoking, addiction/alcohol	No	209 (25.6%)	1009 (97.1%)*	1218 (65.6%)	98.1 (65.9 – 145.6)
		609 (74.4%)	30 (2.9%)	639 (34.4%)	

\*Statistically significant difference; OR: odds ratio; CI: confidence interval.

basic needs (such as food, shelter, and medical care) and deprivation of liberty [19]. Physical violence comprised use of physical force or weapons in attacks that injured or harmed a woman, including beating, kicking, pulling hair, biting, burning, attacks with weapons and objects, and murder [19]. Sexual violence comprised actions that forced the woman to engage in sexual acts against her will, without her consent; it included administering drugs to the women. The authors excluded the section of health-care system violence as it was beyond the scope of the present study.

The adverse maternal outcomes in the present study included threatened abortion (< 20 weeks), complete abortion, placental abruption, preterm labor defined as a live birth before 37 completed weeks of gestation, and premature rupture of the membranes. Adverse fetal outcomes included, fetal distress, fetal death, and small-for-gestational age (SGA) defined as the sex- and gestational age-specific birth weight below the 10<sup>th</sup> percentile [21]. Adverse neonatal outcomes included neonatal death and low birth weight (< 2,500 kg).

#### Statistical analysis

Microsoft Excel 2003 and SPSS version 15 were used to analyze data. Data were statistically described in terms of mean, standard deviation, frequencies (number of cases), and percentages. Student t test was used for quantitative variables and analysis of variance was used to test significance of difference. For categorical data, Chi square test was performed. Multiple logistic regressions were used to evaluate risk factors for intimate partner violence. Relative risk was estimated to evaluate effect of intimate violence during pregnancy on maternal and fetal outcomes. A probability value (*p* value) less than 0.05 was considered statistically significant.

## Results

A total of 1,857 pregnant women completed the study and were divided into two groups; those exposed to any form of violence (*n* = 818, 44.1%) and those not exposed (*n* = 1,039, 55.9%). A total of 336 women did not complete the study for different reasons.

Tables 1 and 2 present the socio-demographic characteristics of the studied women and their intimate partners. The mean age was 28.6 years with 37.6% of women presented in the third trimester. Only 7.2% of the women were divorced.

Table 3. — *Prevalence and severity of intimate partner violence during pregnancy.*

Exposure to intimate partners' violence	Number	Percentage
None	1039	55.9%
Total number of women exposed to any type of violence		
Physical violence alone	73	3.9%
Sexual violence alone	41	2.2%
Emotional violence alone	455	24.5%
Physical and sexual violence	98	5.3%
Physical and emotional violence	104	5.6%
Sexual and emotional violence	25	1.3%
Physical, sexual and emotional	22	1.2%
<i>Total exposure to physical violence</i>	297	15.9%
<i>Total exposure to sexual violence</i>	186	10%
<i>Total exposure to emotional violence</i>	606	32.6%
Severity of different types of violence		
<i>Physical violence (n = 297)</i>		
Mild abuse	103	34.7%
Moderate abuse	139	46.8%
Severe abuse	55	18.5%
<i>Sexual violence (n = 186)</i>		
Mild abuse; no genital contact	20	10.7%
Mild abuse; emotional/sexual humiliation	79	42.5%
Moderate abuse; genital contact	36	19.4%
Severe abuse; penetration	51	27.4%
<i>Emotional violence (n = 606)</i>		
Mild abuse	140	23.1%
Moderate abuse	352	58.1%
Severe abuse	114	18.8%

*N.B:* total physical violence = physical violence only + physical and sexual violence + physical and emotional + physical, sexual and emotional (and so on for other types).

About half of the studied women were para 1-2 (49.6%). The pregnancy was unplanned among 20.5% of the cases. Regarding the intimate partners, in about half of the cases, the age difference between the woman and her partner was less than five years (46.1%) and more than ten years in 11.1%;

Table 4. — Adverse maternal and neonatal outcomes among the studied participants classified by exposure to any type of violence.

	Exposed to violence (n=818)	Not exposed to violence (n=1039)	Total	RR (95%CI)
<b>Maternal adverse outcomes</b>				
Threatened abortion	61 (7.5%)	32 (3.1%)*	93 (5.1%)	2.4 (1.6 – 3.7)
Complete abortion	30 (3.7%)	7 (0.7%)*	37 (1.9%)	5.4 (2.4 – 12.3)
Placental abruption	9 (1.1%)	21 (2.1%)	30 (1.6%)	0.5 (0.3 – 1.2)
Placenta previa	6 (0.7%)	13 (1.3%)	19 (1.1%)	0.6 (0.2 – 1.5)
Preterm labor	49 (5.9%)	26 (2.5%)*	75 (4.1%)	2.4 (1.5 – 3.8)
Premature rupture of Membranes	108 (13.2%)	43 (4.1%)*	151 (8.1%)	3.2 (2.3 – 4.5)
Cesarean delivery	360 (44%)	436 (41.9%)	796 (42.9%)	1.04 (0.9 – 1.2)
Cesarean delivery	286 (34.9%)	332 (31.9%)	618 (33.3%)	1.09 (0.9 – 1.2)
Post partum Hemorrhage	98 (11.9%)	104 (10%)	202 (10.9%)	1.1 (0.9 – 1.5)
<b>Fetal/neonatal adverse outcomes</b>				
Fetal distress	203 (24.8%)	95 (9.1%)*	298 (16.1%)	2.7 (2.2 – 3.4)
Fetal death	7 (0.85%)	2 (0.2%)*	9 (0.5%)	4.4 (0.9 – 21.3)
Small for gestational age	54 (6.6%)	76 (7.3%)	130 (7.1%)	0.9 (0.6 – 1.3)
Neonatal death	8 (0.98%)	11 (1.1%)	19 (1.1%)	0.9 (0.3 – 2.3)
Low birth weight	104 (12.7%)	63 (6.1%)*	167 (8.9%)	2.1 (1.6 – 2.8)

\*Statistically significant difference; RR: Relative risk; CI: confidence interval.

Table 5. — Adverse maternal and neonatal outcomes among the studied participants classified by exposure to physical violence.

	Exposed to physical violence (n=297)	Not exposed to physical violence (n=1560)	Total	RR (95%CI)
<b>Maternal adverse outcomes</b>				
Threatened abortion	56 (18.9%)	37 (2.4%)*	93 (5.1%)	7.9 (5.3 – 11.8)
Complete abortion	25 (8.4%)	12 (0.8%)*	37 (1.9%)	10.9 (5.6 – 21.5)
Placental abruption	8 (2.7%)	22 (1.4%)	30 (1.6%)	1.9 (0.9 – 4.2)
Placenta previa	5 (1.7%)	14 (0.9%)	19 (1.1%)	1.8 (0.7 – 5.2)
Preterm labor	39 (13.1%)	36 (2.3%)*	75 (4.1%)	5.7 (3.7 – 8.8)
Premature rupture of membranes	74 (24.9%)	77 (4.9%)*	151 (8.1%)	5.1 (3.8 – 6.8)
Cesarean delivery	137 (46.1%)	659 (42.2%)	796 (42.9%)	1.1 (0.9 – 1.3)
Cesarean delivery	110 (37.1%)	508 (32.6%)	618 (33.3%)	1.1 (0.9 – 1.3)
Postpartum hemorrhage	42 (14.1%)	160 (10.3%)	202 (10.9%)	1.3 (1 – 1.9)
<b>Fetal/neonatal adverse outcomes</b>				
Fetal distress	148 (49.8%)	150 (9.6%)*	298 (16.1%)	5.2 (4.3 – 6.3)
Fetal death	6 (2.1%)	3 (0.2%)*	9 (0.5%)	10.5 (2.6 – 41.7)
Small for gestational age	41 (13.8%)	89 (5.7%)*	130 (7.1%)	2.4 (1.7 – 3.4)
Neonatal death	7 (2.4%)	12 (0.8%)*	19 (1.1%)	3.1 (1.2 – 7.7)
Low birth weight	78 (26.3%)	89 (5.7%)*	167 (8.9%)	4.6 (3.5 – 6.1)

\*Statistically significant difference; RR: Relative risk; CI: confidence interval.

34.3% of the partners were smokers, addicts or drinking alcohol. Evaluation of risk factors for exposure to intimate partner's violence during pregnancy, the authors found that most of women exposed to violence were aged 25 – 30 years (70.9%), presented during first trimester,  $\geq$  para 1-3, had lower educational level with low socio-economic status. Unwanted pregnancy was significantly associated with higher prevalence of exposure to intimate partners' violence (36.2% vs 8.2%). Regarding the partners' characteristics, it was found that partners of most women exposed to violence had wider age difference to their wives (from 5 to > 10 years), lower educational level, and addicted to drugs or alcohol. The most

common drugs abused by the partners according to report of women were cannabis, rohypnol, parkinol, seconal, and tramadol. These drugs have common names among abusers and can be easily identified through their public label.

According to the NORAQ, a total of 44.1% of studied women was exposed to IPV during pregnancy. The most common type was emotional violence that was reported among 32.6%. About (15.9%) of studied women had been exposed to physical violence while 10% had been exposed to sexual violence (Table 3).

Assessment of adverse maternal outcomes showed that 5.1% of women had threatened abortion, 2.7% had an-

Table 6. — Frequency and pattern of physical violence among studied women exposed to physical violence.

Form of physical violence ##	Number	Total
Slapping	42	14.1%
Punching	53	17.8%
Kicking	90	30.3%
Hitting by blunt object	46	15.5%
Shooting	4	1.3%
Stabbing	14	4.7%
Whipping	39	13.1%
Burning	9	3.0%
Total	297	100%

##Data showing main form of violence.

tepartum hemorrhage, 4.1% had preterm labor, 10.9% had postpartum hemorrhage, and 8.1% had premature rupture of membranes. The most common adverse fetal outcome was fetal distress that was reported in 16.1% of cases, 7.1% of fetuses were small for gestational age, and after delivery low birth weight was evident among 8.9% of neonates. Women exposed to IPV during pregnancy showed significantly higher incidence of threatened abortion (7.5% vs 3.1%), complete abortion (3.7% vs 0.7%), preterm labor (5.9% vs 2.5%), and premature rupture of membranes (13.2% vs 4.1%). As regarding fetal and neonatal outcomes, fetal distress, fetal death, and low birth weight were significantly more common among women subjected to violence during pregnancy (Table 4).

As shown in Table 5, there was an increased risk of most of adverse maternal outcomes and all of adverse fetal outcomes among women who were exposed to physical violence versus those who did not. Abortion had the highest relative risk (10.9 for complete abortion and 7.9 for threatened abortion) with exposure to physical violence. Cesarean delivery and postpartum hemorrhage were more prevalent among women exposed to physical violence but without statistically significant difference. All adverse fetal outcomes showed significant increased risk with exposure to physical violence.

The total number of cases who were exposed to physical form of violence was 297 (15.9%). The most prevalent form of physical violence among these cases was kicking (30.3%) and punching (17.8%); 39 (13.1%) women were exposed to whipping, 14 women (4.7%) were exposed to stab wound, four cases have been exposed to firearm shooting (1.3%), and nine women (3.0%) were exposed to burns (Table 6).

By examining the inflicted wounds among the total 297 women exposed to physical violence, it was found that contusions were the most common type of wound (43.1%). Most of the wounds were induced by a heavy blunt object (64.3%) while rough objects were used with 26.6% of cases to induce abrasions. Contused wounds represent 19.5% of all wounds. Four women had firearm injuries (one had inlet

Table 7. — Types of wounds and weapons used among the studied women exposed to physical violence (n = 297).

Types of wounds	Number	Percentage
Contusions	128	43.1%
Contused wounds	58	19.5%
Abrasions	79	26.6%
Stab wounds	14	4.7%
Inlet of firearm wound	1	0.3%
Inlet and exit of firearm wounds	3	1%
Dry burn	2	0.7%
Scalds	7	2.4%
Fractures	5	1.7%
Total		297
100%		

#### Weapons used in inducing wounds

Weapons used in inducing wounds	Number	Percentage
Heavy blunt object	191	64.3%
Sharp object	14	4.7%
Firearm weapon	4	1.3%
Dry fire	2	0.7%
Hot fluid	7	2.4%
Rough object	79	26.6%

wound only and three has inlet and exit wounds), while 14 women has stab wounds caused by sharp objects. Seven women (2.4%) were exposed to scolds while two women (0.7%) were burned by dry fires and five women (1.7%) were exposed to fractures (Table 7).

## Discussion

IPV against women is difficult to measure for different reasons; including the lack of uniform definition and that some women are reluctant to disclose violence as a result of social shame or cultural considerations [21].

The present study has shown that 44.1% of women were subject to different forms of violence during pregnancy inflicted by their partners. There are many reports – both national and international – confirming the widespread occurrence of this problem albeit with variable rates. Studies have shown great variability of prevalence of IPV from country to country and even among studies within the same country. Findings from 80 population-based studies carried out in 50 countries show that 10% to 60% of women who had ever been married or partnered had experienced at least one incident of physical violence from a current or former intimate partner [22].

Nationally, the Egyptian Centre for Women's Rights in 2008 suggested that violence against women was on the rise [23], and according to a United Nations Children's Fund (UNICEF) study in 2000, 35% of Egyptian women were beaten by their husbands [24]. In the 2005 Egyptian Demographic and Health Survey (EDHS), 47% of ever-

married women reported ever having experienced physical violence since the age of 15 years [25]. In the present study, although 44.1% of studied women had been exposed to violence during pregnancy, only 16% had been subjected to physical violence.

However, a comparative analysis of the 1995 and 2005, EDHS suggests that there may have been a decrease in the prevalence of more severe forms of physical abuse along with an increase in overall reporting of violence [24]. In the 1995 survey, 35% of married women reported exposure to physical violence by their current husbands [26]. However, in the 2005 survey, a significant decrease of physical and sexual violence rates to 22% was noted [25].

Internationally, a recent study by Urquia *et al.*, [27] have found that among 8,400 Canadian women, 10.9% have reported exposure to any violence during the two-year period preceding the postpartum interview and among them only 3.3% were exposed during pregnancy.

Previous comprehensive review of the literature by Gazmararian *et al.*, [28] have found that the prevalence of IPV in pregnancy ranged from 1% – 20%. A population-based study in New Zealand revealed a prevalence of 9% of IPV during pregnancy [29].

With regards to the type of IPV, the most common reported type in the present study was emotional violence (32.6%). Sexual violence was reported among 10% of the studied women. This is consistent with previous two studies of sexual abuse of married Egyptian women. These studies showed that 12% of women in Lower Egypt and 17% of women in Cairo reported being forced to engage in sex by their partners [26, 30]. The term marital rape is not legally, socially or culturally accepted in conservative societies like Egypt. However, studies in Jordan and Morocco have shown that an overwhelming majority of women ascertain the right to refuse sex with their husband under certain circumstances [3]. In an Iranian study by Faramarzi *et al.*, [31], the prevalence of physical, sexual, and emotional domestic violence was respectively 9.1%, 30.8%, and 19.2%.

Previous studies have shown lower percentage of physical violence during pregnancy (9.1% in study of Faramarzi *et al.*, [31] vs 16% in the present study). The most common form of physical violence reported in the present study was kicking followed by punching and slapping. In their study Faramarzi *et al.*, [31] have shown that the most prevalent form of physical violence was slapping and punching.

Assessment of risk factors for IPV revealed that the probability of exposure to IPV during pregnancy is increased among younger divorced women, women of higher parity, lower educational level, lower socioeconomic status, wider age difference with husband, lower educational level of husband, and husband's addiction to drugs and alcohol. Similar findings have been reported by previous studies [25, 32].

In this study, younger aged women were exposed to IPV more than older women; similar results were found in the

study carried out among Australian women reporting that 19% of 6,300 women aged 18–24 years were exposed to violence in the preceding year, compared with 10% of women aged 25–30 years, 6.8% of women aged 35–44, and 1.2% of women aged 55 and over [33]. Employment and the socio-economic status have the potential to impact IPV, as IPV is shown to be associated with unemployment and underemployment [34].

In the present study, there was a wide distribution of drug abuse among husbands who committed different forms of violence against their wives during pregnancy; the most common drugs abused according to says of women were cannabis, rohypnol, parkinol, seconal, and tramadol. Other studies have shown a strong relation between violence during pregnancy and the use of illicit drugs by the male partner [35]. In general, among men who assaulted their female partners, substance use has been found to frequently accompany beating [31].

Consistent with the present finding, a previous review of national surveys in nine countries found a consistent association of an increased risk of partner abuse for women with low educational attainment, being under 25 years of age and having low socioeconomic status [25]. Also another multi-national study found significant association between physical IPV and several characteristics including regular alcohol consumption by the husband and poor family work status [36].

In a comparative analysis of the 1995 and 2005 EDHSs, there was a decrease of the association between socio-demographic variables and physical violence. However, high educational level was still associated with lower rates of IPV [37] and even some research suggests that education has a protective effect on women's experience with violence, even when controlling for age and income [38].

The present study has shown that compared to non-exposed women, women who had been exposed to IPV during pregnancy had higher odds of miscarriage, preterm labor, and premature rupture of membranes. Concerning birth outcomes, the present study has shown that there was significant association between fetal distress, fetal death and low birth weight, and exposure to intimate partner violence. Associations between IPV and adverse maternal and neonatal outcomes have been supported by multiple previous studies [10-13, 27, 31]. However, in one meta-analysis assessing abuse as a risk factor for low birth weight that included eight studies, seven of them reported non-statistically significant associations [9]. A causative relation between IPV and adverse maternal and fetal/neonatal outcomes cannot always be explained. Some outcome such as miscarriage and placental abruption can be explained by the direct effect of trauma. Others such as low birth weight and fetal distress could not be simply explained.

In conclusion, intimate partner violence during pregnancy is widespread public health issue in Egypt and is associated with multiple socio-demographic determinants as

younger age, lower educational level, poverty, inadequate antenatal care, and partners' addiction. The burden of the problem on maternal and neonatal health is great and it is associated with increased risk for multiple significant health issues as miscarriage, preterm labor, premature rupture of membranes, and low birth weight.

The present study has few limitations. The prospective cohort hospital-based nature is one to bear in mind and hence results cannot be extrapolated to the whole Egyptian community; therefore community based study is recommended. Despite this, the study addresses an important health issue that is not widely studied in the country. Another possible limitation would be the potential under-reporting of female-related or male-related data as a result of shame. All efforts were made to acquire as much complete data as possible. The study used a structured interview to obtain data regarding issues such as addiction, alcohol, etc. Answers to these questions may be quite subjective and probably need further tools and documentations to assess accurately. The interviewers attempted to adhere to the definitions of such conditions and maximize the data obtained in the context of such a short structured interview process.

The authors recommend that further wider scale population-based surveys are required for more detailed addressing of intimate partner violence during and away from pregnancy among Egyptian women. Increasing public and political interest in such a problem should be a global aim for national and international health and women's organizations.

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