

Domestic Violence Endured by Pregnant Women and Their Effect on Maternal and Neonatal Outcome.

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ABSTRACT

Violence against pregnant women is a significant social and a major health problem in the world. It was estimated that 25.0% of women worldwide have been victims of intimate partner violence. This study **was aimed** to assess the effect of domestic violence endured by pregnant women on maternal and neonatal outcomes. A prospective study was carried out at ante-natal clinics in 5 health centers in Port-Said city. The study subjects were 400 users of antenatal care services. An interview questionnaire and assessment sheet were designed and utilized to collect the necessary data. **The results** of the current study revealed that (39.5%) of women were exposed to domestic violence in the current pregnancy, and domestic violence can take many forms including physical (38.6%), emotional (95.6%), sexual (13.9%), and economic violence (65.1%). It was found that in abused exposure group, the gestational age was 38.14 weeks, premature rupture of membrane (PROM) was 28.6%, and premature birth 14.1% ,while, in not abused group, was 38.85 weeks, 5.7% and 2% respectively with statistically significant differences (p- value < 0.001). Also using the odds ratio shows that the risk of PROM in abused exposure group was 6.6 times more than those who are not in abused exposure group, and risk of premature birth in abused exposure group was 7.95 times more than those who are not in abused exposure group. Regarding newborns parameters, the mean length of infants, in abused was less than that in not abused exposure group with statistically significant difference (p- value < 0.001). **It was concluded** that violence during pregnancy may be more common than many conditions for which women are routinely screened or evaluated during pregnancy including preeclampsia, placenta previa, and gestational diabetes. Also it has an adverse effect on mothers and neonates, therefore, the study **recommended** the importance of development and dissemination of training courses and education programs for the decision makers, workers in health care settings and antenatal clinics to raise awareness of the seriousness of domestic violence facing pregnant women and how to address and manage it.

Key words: Domestic violence, maternal and neonatal Outcome.

Introduction

High Domestic violence (DV) can be defined as a pattern of abusive behavior in

any relationship that is used by one partner to gain or maintain power and control over another intimate partner. Domestic violence can be physical, sexual, emotional, economic, or psychological actions or threats of actions

that influence another person. It is any behavior that intimidates, manipulates, humiliates, isolates frightens, terrorizes, coerces, threatens, blames, hurts, injuries, or wounds someone (**Pathik et al, 2011**).

Pregnancy is supposed to be a time of peace and safety. It is a time where the family turns its thoughts towards raising the next generation and growing a healthy baby. Unfortunately for many women, pregnancy can be the beginning of a violent time in their lives. Pregnancy is an ideal time to screen for domestic violence. Pregnancy is a critical point of intervention because many women seek health services from trained providers during pregnancy, and prenatal care can be an opportunity for the detection of violence and for the provision of services and referrals to mitigate its consequence. (**Abdollahi et al, 2015**).

Domestic violence (DV) is a serious global health issue and human rights violation that adversely affects the lives of women worldwide. (**Silverman et al, 2006 & Brownridge et al, 2011**) More specifically, researchers have found a prevalence of physical partner violence during pregnancy that varies from 1.2% to as high as 27.6% in some countries **World Health Organization (2013)** whether it occurs during pregnancy or not, DV leads to poor physical and mental health outcomes for both women and their neonates. (**Brownridge et al, 2011**) It was reported that there is a link between violence during pregnancy and adverse birth outcomes, such as low birth weight (LBW), preterm birth, and intrauterine growth restriction (IUGR) **WHO (2013) & Silwal (2012)**.

Pregnancy when coupled with DV is a form of intimate partner violence (IPV) where health risks may be amplified. Abuse during pregnancy produces many adverse physical and psychological effects on both the mother and fetus.

General physical assault during pregnancy, or blunt trauma to the abdomen, irrespective of who the perpetrator can affect birth outcomes through behavioral or physiological responses to stress, including the release of vasoconstrictors or cortisol, which can result in IUGR, or the release of prostaglandin, which can cause premature contractions. Additionally, women in abusive relationships might lack autonomy to make decisions about their health and care seeking, which can lead to inadequate prenatal care and poor nutrition, potentially resulting in IUGR and LBW. (**Alhusen et al, 2013**)

Causal mechanisms underlying these associations are not clear; it may be that violence-related stress leads to increased levels of cortisol which has been associated with lower birth weight infants. Although not all studies have found associations between violence during pregnancy and low birth weight or preterm infants, most of these studies do not take into consideration the severity or specific bodily location of the physical assault (e.g., abdominal or other location) which may account for some of these differences. (**Chan et al, 2011**).

Research examining pregnancy-related outcomes of violence has focused primarily on infant birth weight and preterm birth, two conditions associated with infant mortality. A recent meta-analysis of 30 studies on these topics (which resulted in increased statistical power to detect differences) found that maternal exposure to domestic violence was significantly associated with an increased risk of low infant birth weight, as well as an increased risk of preterm birth (**Shamu et al, 2011**) Domestic violence during pregnancy has received limited research attention in Port-Said. Therefore this study was carried out to draw the attention of maternity nurses to this problem and to the related role she can

play in practice, research and health care policy formulation.

The Aim of the Present Study was:

To assess the effect of domestic violence endured by pregnant women on maternal and neonatal outcomes.

SUBJECTS AND METHODS

Study Design:

A prospective descriptive design was utilized in this study.

Study Setting:

The study was carried out in ante-natal clinics in 5 health centers in Port-said selected randomly from twelve centers; namely: Port-Fouad, El Manakh, Fatma-Elzahraa, Omar Ibn-Elkhatib, and Osman Ibn-Afan centers.

Subjects:

A consecutive sample of women fulfilling the foregoing criteria was recruited from the study setting until the required

Sample assessment

Day	Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday
Clinic						
Port-fouad (1)		*			*	
Fatmaelzahraa	*			*		
El -manakh	*			*		
Omar ebnelkhatib			*			*
Osman ebnafan			*			*

Table (1) sample assessment

The data was collected through the days of the week according to the table (1).

Tools of Data Collection:

Tool I: Structured interview questionnaire

sample size (400) was obtained. The sample size was determined by using the following equation (Brown and Hollander, 1977).

$$\text{Sample size (n)} = \frac{P(1-P)}{D^2} Z^2$$

- P:** Proportion of antenatal care coverage in port said outpatient clinics = 32% (capmas.Egypt, 2010).
- Z:** a percentile of standard normal distribution determined by 95% confidence level = 1.96
- D:** One half the width of the desired sample confidence interval = 5%

The calculated sample size was 334 women. Due to the expected non-participating rate (20%), the final sample size was 400 women.

The total sample was divided into five centers.

Structured interview questionnaire was developed and modified by the researcher based on assessment screen questionnaire by Norton et al., (1995) [12]

The questionnaire consisted of four parts of the following:

The First Part: This part included socio demographic data of woman and her husband such as "age, education, occupation, residence, house condition, and family income".

The Second Part: This part included data about obstetric history such as "gravidity, parity, the number of living children, as well as detailed history of last pregnancy and labor, complications encountered during the present pregnancy and whether the present pregnancy was wanted or not were also included".

The Third Part: This part included questions about the history of exposure to violence during pregnancy, which includes: the type of violence (physical, emotional, sexual and economic violence).

The Fourth Part: This part included questions about any maternal and fetal problems which pregnant women had experienced after exposure to violence during pregnancy.

Tool (II) Assessment sheet

-It was developed by the researcher and consisted of two parts

-The First Part (Delivery data sheet):

This part includes the necessary data about maternal condition during labor such as "gestational age, premature rupture of membrane etc".

-The Second part (Neonatal parameter assessment sheet):

To collect the needed data such as "neonatal weight, length, head, and chest circumference immediately after birth and any complications occurred after birth".

Pilot Study:

A pilot study was carried out on 10% of the sample in the study setting. The purposes of the pilot study were to test the applicability and clarify the feasibility of the study tools. It served to estimate the time needed to complete the tools. It also helped to find out any obstacles and problems that might interfere with data collection, based on findings of the pilot study, certain modification of the tools were done. Subjects included in the pilot study were excluded from the study subjects.

Field Work:

Pregnant women seeking prenatal care were invited to participate in the study by the researcher, regardless of gestational age. The informed consent was taken from the participants and they were informed of the voluntary nature of the study and the aim was explained. In a 20 - 40 minute, face to face, a structured interview was conducted by the researcher in a private area of the clinic. Each woman was interviewed separately to give her chance to talk freely about DV using Tool I. The questions were given in Arabic language. A collection of data covered a period of 18 months "from the first of January 2015 to the end of June 2016", then followed until labor in Port-Fouad general hospital, Port-Said general hospital, and El Nasar hospital. As the second tool II used at labor to collect data of maternal condition during labor such as "gestational age, premature rupture of membraneetc". and neonatal weight, length, head, and chest circumference immediately after birth and any complications occurred after birth".

Ethical Considerations

Before starting any steps in the study, an official letter was addressed from the dean of the Faculty of Nursing to the medical directors of the identified study settings, requesting their cooperation and permission to conduct the study. In addition, an oral consent was taken from pregnant women in

the study, after explaining the purpose and the importance of the research for each of them.

Statistical design

Statistical analysis was done using SPSS 11.0 statistical software packages. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, in addition to means and standard deviations for quantitative variables. Quantitative continuous data were compared using Student t-test in case of comparisons between two groups. Qualitative variables were compared using Chi-square test. The collected data were organized, categorized, tabulated and analyzed by using the computer. Data entry was done using Epi-info computer software package, while statistical analysis was done using a statistical graphic, statistical software package, quality control was done at the stages of coding and data entry.

Limitations of the Study

The investigator took a long time and hard effort to convince a woman to talk freely or participate in the research, the researcher missed from following- up 15 of the sample; also sometimes it is difficult to find a place to complete the interview.

Result

Table 1: illustrates the distribution of the studied sample (abused and none abused groups) according to their socio-demographic characteristics. The table revealed that the ages of women ranged from 18-<40 years; with a mean of 27.1 ± 4.9 . (59.0%) was more than 20 years. Most women were married and from the urban origin (98.8% & 90.8% respectively). Only 19.5% of the women reported that they were employed at the time of the study. 61.0% was secondary education, while 10.3% of the studied groups were illiterate or can just read and write.

Moreover, (23.8%) of the sample were not satisfied with the family financial demands. The mean crowding index was 1.6 ± 0.6 and (72.2%) reported that the monthly family income was enough.

Table 2: shows the distribution of women according to their obstetrical history. The table shows that (43.2%) of the sample had ≥ 2 pregnancies and (33.5%) had no previous delivery. The majority of the sample 87.8% had no abortion, and 33.5% had no living children Furthermore, 89.2% had the desire to become pregnant and only 1.0% suffered from acute complication such as (abortion, preterm labor, etc) because of domestic violence.

Figure 1: Prevalence of domestic violence during the current pregnancy

Figure2: Prevalence of different types of domestic violence during the current pregnancy (n=158).

Table 3: Problems encountered among abused pregnant women. The most common problem was lack of prenatal care (40.3%) followed by insomnia (32.6%), feeling of anxiety, fear and depression (19%), while, 12.7% of the abused pregnant women were exposed to obesity and loss of appetite, seeking divorce, physical injuries and bleeding during pregnancy (9.5%, 7.6%, and 1.3% respectively).

Table 4: shows the distribution of the study subjects according to maternal effect encountered due to domestic violence. It was revealed that the gestational age, in abused exposure group, was 38.14 weeks (SD = ± 1.55) and in the non-abused group was 38.85 weeks (SD = ± 1.32). While 28.6% for PROM and not abused group had 5.7% with statistically significant differences (p value < 0.001). Using the odds ratio the risk of PROM in the abused exposure group was 6.6 times more than those who are in not abused exposure group. Pre-mature birth, in the abused group was 14.1% and in the non -

abused group was 2%. The risk of pre-mature birth in the abused exposure group was 7.95 times more than those who are in not abused exposure group. The frequency of stillbirth in abused exposure group was zero, and in the non- abused exposure group were 4. This relation with Fisher exact test and P value 1.000 was not statistically significant. This means, exposure to abused, did not effect on stillbirth.

Table 5: Newborns parameters differences among proven abused and the non-abused on newborns. It indicates that differences in these percentages across

categories are statistically significant ($P \leq 0.05$). The mean length of infants, in abused exposure group, was 48.69 ± 1.88 and in not abused exposure group, was 49.42 ± 213 . This difference was statistically significant (p - value < 0.001). This means, exposure to domestic violence effects on baby's length. The mean head circumference of newborns, in DV exposure group was 34.43 ± 1.24 and, in non-DV exposure group, was 34.89 ± 1.45 . This difference was statistically significant (p - value < 0.001). This means, exposure to DV, effects on baby's head circumference. The mean infant's weight in DV exposure group was 2885.20 ± 354.35 gr, and in non-DV exposure group, was 3136.46 ± 413.32 . This difference was statistically significant (p - value < 0.001). This means, exposure to DV, effects on infant's weight.

Table (1): Distribution of women according to their socio-demographic characteristics (n=400).

Socio-demographic characteristics	Studied women (n=400)	Pregnant women
	No.	%
Age (years)		
Less than 20	19	4.8
20-	236	59.0
30-<40	145	36.2
Min-Max	18-39	
Mean±SD	27.1±4.9	
Residence		
Urban	363	90.8
Rural	37	9.2
Marital status		
Married	395	98.8
Divorced	5	1.2
Widow	0	0.0
Occupation		
Housewife	322	80.5
Working	78	19.5
Level of education		
Illiterate	10	2.5
Can read and write	31	7.8
Primary education	56	14.0
Secondary education	244	61.0
University education	59	14.7
Satisfaction of financial needs by husband income		
No	95	23.8
Yes	305	76.2
Number of family members		
Min-Max	2-7	
Mean±SD	3.3±1.2	
Number of rooms in the house		
Min-Max	1-4	
Mean±SD	2.1±0.3	
Crowding index		
Min-Max	0.7-3.5	
Mean±SD	1.6±0.6	
Monthly family income		
Enough	289	72.2
More than enough	16	4.0
Not enough	95	23.8

Table (2): Distribution of women according to their obstetric history.

Obstetric history	Studied pregnant women (n=400)	
	No.	%
Gravidity		
1-2	227	56.8
3-4	159	39.7
5-6	14	3.5
Min-Max	1-6	
Mean±SD	2.3±1.2	
Parity		
None	134	33.5
1-2	228	57.0
3-	38	9.5
Min-Max	0-5	
Mean±SD	1.2±1.1	
Number of abortions		
None	351	87.8
Once	47	11.8
Twice	2	0.4
Number of living children		
None	134	33.5
1-2	227	56.8
3-4	38	9.4
5-6	1	0.3
Min-Max	0-5	
Mean±SD	1.2±1.1	
Acceptance of the present pregnancy		
No	43	10.8
Yes	357	89.2
Duration of pregnancy (weeks)		
1 st trimester (1-12)	10	2.5
2 nd trimester (13-24)	269	67.3
3 rd trimester (25-36)	121	30.2
Min-Max	1-37	
Mean ± SD	22.2±4.9	
Suffering from acute complications		
No	396	99.0
Yes	4	1.0

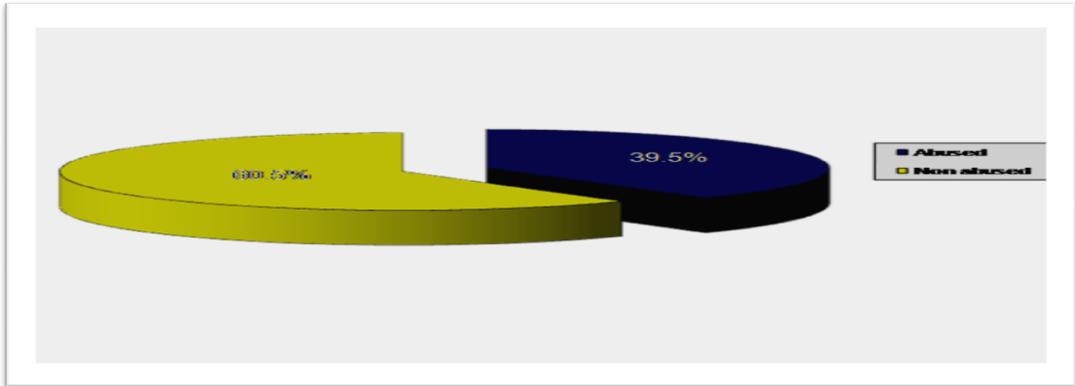


Figure (1): Prevalence of domestic violence during the current pregnancy.
Categories are not mutually exclusive-

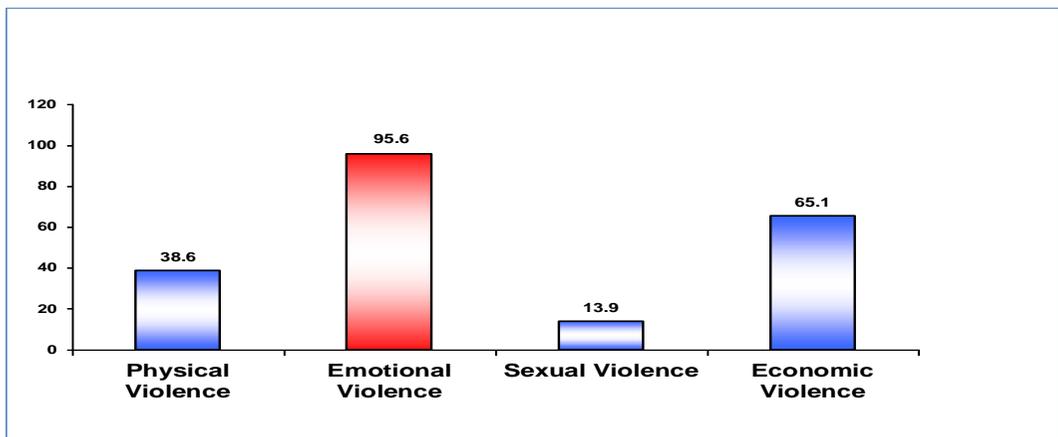


Figure (2): Prevalence of different types of domestic violence during the current pregnancy (n=158).

Table (3): Distribution of the study subjects according to problems encountered due to domestic violence.

Problems encountered due to domestic violence	Studied pregnant women (n=158)	
	No.	%
▪ Lack of prenatal care	64	40.3
▪ Insomnia, inability to rest and sleep	52	32.6
▪ Feelings of anxiety, fear and depression	30	19.0
▪ Obesity	20	12.7
▪ loss of appetite	20	12.7
▪ Seeking divorce	15	9.5
▪ Presence of injuries and physical pain	12	7.6
▪ Threatened abortion	2	1.3

Categories are not mutually exclusive

Table (4): Distribution of the study subjects according to maternal effect encountered due to domestic violence.

Factor	Abused	Not abused	P value
Mean gestational age	38.14 ± 1.55 weeks	38.85 ± 1.32 weeks	<0.001*
Pre-term birth	14.1%	2%	<0.001*
PROM	28.6%	5.7%	<0.001*
Frequency of stillbirth	00%	0.3%	1.00

Table (5): Distribution of the study subjects according to new born effects encountered due to domestic violence.

Neonatal parameters	D V exposed	DV non –exposed	P value
Baby’s head circumference (cm)	34.42 ± 1.23	34.88 ± 1.45	<0.001*
Birth weight (g)	2886.19 ± 354.35	3136.46 ± 413.32	<0.001*
Birth length (cm)	48.69 ± 1.88	49.42 ± 2.13	<0.001*

Discussion

Domestic violence is a social concern of the whole world and an important public and, a reproductive health issue. (García-Moreno et al 2005) It could be a significant predictor of adverse outcomes for both the mother and her infant. (Audi et al, 2012& Flach et al,2011) Moreover, violence during pregnancy have long term consequences especially when it is under-recognized. (McMahon et al, 2011& WHO (2005) .

The present study found that the prevalence of DV is more than of one third of women reported having ever experienced some type of violence during current pregnancy. WHO, (2005) have reported that the overall prevalence of DV in the world is between 10.0% and 69.0% (Shamu et al, 2011& Esther et al., 2012)

This study has shown that almost one third of women had suffered from DV during their previous pregnancies. Esther et al., 2012 in Nigeria found that 28.9% of the subjects were exposed to DV during their previous pregnancies. Bailey B.A.(2010) Concerning the types of DV, the present study showed

that the most common exposure to violence in the current pregnancy was the emotional type, followed by economic violence, and physical violence. On the other hand, it was noticed that the least of women reported exposure to sexual violence in the current pregnancy. The same results supported by another study in Iran. It was indicated that verbal psychological violence was the most common type in the sample followed by economic, physical, and sexual. (Zareen et al, 2009) Obviously exposure to DV during pregnancy takes different forms in different countries. It is difficult to arrive at definite conclusions because of the lack of a standard definition, differences in study methodology, parameters observed and the unwillingness of women to disclose physical abuse because of cultural barriers. (Nasir, Hyder. 2003) & (Johnson et al, 2005) considering the high pregnancy rate in the developing world, violence during pregnancy is a public health concern that needs special attention. (Faramarzi et al,2005)

There are many dangerous effects that violence during pregnancy can cause for both the mother and child. A violent pregnancy is considered high risk because verbal, emotional, and physical abuse all lead to adverse health consequences for both the mother and fetus (Amirmoradi et al,2005)In

the present study, the most common problems encountered due to DV during pregnancy were the lack of prenatal care followed by insomnia, feeling of anxiety, fear, threatened abortion and, depression. In addition, maltreatment of children, obesity, seeking a divorce, physical injuries, and bleeding during pregnancy were also reported. **Amirmoradi et al. (2005)** found that being the victim of DV and having marital problems were the most common reasons for women attempting to self-suicide. Specifically, it was found that 35 victims of DV (between the ages of 21 to 25 years) reported that they attempted to set themselves ablaze because of the physical and psychological violence. The primary reason victims cited for attempting to commit suicide was their husband's physical abuse and marital dissatisfaction. Studies have also found a correlation between domestic violence and increased use of abortion. (**Ntaganira et al, 2009**)

Moreover, violence is a serious issue and leads to many serious consequences including death, physical injury and disability, depression, post-traumatic stress syndrome, suicidal ideation, high blood pressure, unwanted pregnancy, miscarriage, low birth weight babies and sexually transmissible infections (**Fanslow et al, 2008**).

A few studies have investigated the link between violence and abortion. (**Cokkinides et al.(1999),Silverman et al.(2010)& Stöckl et al. (2012)**) A Tanzanian survey conducted by **Stöckl et al. (2012)** found that women who experienced violence during pregnancy were 1.9 (95% CI: 1.30-2.89) times more likely to report an induced abortion. **Barnett.(2001)** .The present study, however, did not show any significant association between violence and abortion. More detailed studies in this area are required. Many mechanisms have been postulated on how DV may impact on birth outcomes, such as direct health, mental health

Bacchus et al. (2004) & Bailey. (2010). physical and behavioral effects. Kearney et al, (2004) & Nune et al,(2010), Negative health behavior such as inadequate utilization of prenatal care and insufficient weight gain have been associated with both physical IPV and LBW. Also, the link between physical IPV and a delay in prenatal care and poor nutritional intake, which are associated with poor pregnancy outcome, has been explained in several reports. Simhan , Canavan.(2005)

PROM is Spontaneous rupture of membranes before the beginning of labor. **Abdollahi et al.(2015)** The current results showed premature rupture of membranes, in maternal exposure to DV, 6.67 times more than maternal non exposure. **Shunway, et al.** indicated that maternal DV during pregnancy significantly increases the risk of premature rupture of the membranes (PROM): rupture of membranes before the onset of labor, or up to 37 weeks of gestation). **Khodakarami et al. (2009)& Shah.(2010)**.

Research examining pregnancy-related outcomes of violence has focused primarily on infant birth weight and preterm birth, these two conditions associated with infant mortality. A recent meta-analysis of 30 studies on these topics found that maternal exposure to domestic violence was significantly associated with an increased risk of low infant birth weight, as well as an increased risk of preterm birth (**Shah & Shah, 2010**). Although the exact causal mechanisms underlying these associations are not clear, it may be that violence-related stress leads to increased levels of cortisol which has been associated with lower birth weight infants (**Valladares, et el, 2009**). Although not all studies have found associations between violence during pregnancy and low birth weight or preterm infants, most of these studies do not take into consideration the severity or specific bodily location of the physical assault which may account for some of these differences.

Our study showed that, PROM in maternal exposure to DV during pregnancy, by using, odds Ratio was, 6.67 times more than maternal non exposure maternal gestational age, infant's weight, length and head circumference in maternal exposure to DV, were lesser than the control group. Our results showed, infant's length of maternal exposure to SHS during pregnancy was 1.73 cm and head circumference 0.46 cm lesser and 251g reduction in birth weight than infants of non- exposed to DV with highly significant statistically. Also, there was no relationship between maternal exposure to DV during pregnancy and rates of abortion, type of delivery and stillbirth.

DV prior to and during pregnancy has a negative impact on both the mother and neonates. Several studies have shown that maternal exposure to DV, cause to decrease in birth weight, reducing the birth length and decrease of head circumference. This reduction is variable, from 1g, to 253g. **Shah, P.S., & Shah, J** (2010). It was reported that mean birth weight among newborns with IPV, is 43 g less than infants of none exposed to violence. **Murphy.** (2001)& **Boy ,Salihu.**(2004)The positive association demonstrated between IPV and both preterm birth and LBW is best interpreted within a conceptual.

Additionally, women living in violent relationships could be socially isolated or lack autonomy, which can affect their prenatal care use and their health and nutritional decisions, potentially resulting in IUGR and LB. **Shah, P.S., & Shah, J**(2010). The present results showed, odds of preterm delivery in the exposed to DV group was 7.95 more than control group also, exposed to DV has adverse effect on gestational age. Stress can result in the release of vasoconstrictors such as catecholamines, β - endorphin, and cortisol, triggered by a neuroendocrine response, which can result in fetal hypoxia and/or IUGR. Furthermore, stress can cause the dysregulation of the immune system, which can trigger early contractions of the

uterus through the release of prostaglandin. **Peterson et al .(1997)& Wadhwa et al ,(2010)**Stress can also exacerbate chronic health problems (diabetes, hypertension, and asthma) for which pregnant women might already be at a higher risk, and it can increase unhealthy behaviors (e.g. tobacco, alcohol, and/or illegal drug use) that are often associated with experience of abuse, and can lead to adverse pregnancy outcomes. **Rodrigues et al.** (2008).

Conclusion

The prevalence of DV among pregnant women is relatively high in Port said. Moreover, Exposed pregnant mothers' outcomes had negatively reflected on themselves and their neonate's outcome, Such as preterm labor, premature rupture of membrane, reduced birth weight, and shorter length.

Recommendation

Based on the results of the present study, the following recommendations were suggested:

- Screening should be a part of antenatal care; questions about DV should be routinely included when taking a social history, they may be effective in detecting cases of DV.
- Counseling husbands about the adverse effect of DV on pregnancy outcome is needed
- Life skill education classes should be conducted for women by female teachers in different schools as evening classes that reinforce male entitlement and women's submissiveness to find more effective ways to avoid violence within intimate partner relationships.
- Mothers exposed to violence during pregnancy should be also monitored closely

for weight gain, fetal growth and psychological status to assure a successful pregnancy and a healthy newborn.

- Strengthen the trend toward the assessment of psychosocial issues during pregnancy as a standard of care.

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